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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/810,956
Filing Date	March 16, 2001
First Named Inventor	Aiko Hanyo et al.
Art Unit	1773; Confirmation No. 7257
Examiner Name	Donald L. Tarazano
Total Number of Pages in This Submission: 2	Attorney Docket Number: COS-822 (APIP-1065)

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
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- ☐ CD, Number of CD(s) _____
- ☐ After Allowance communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☑ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below): Postcard; check in the amount of $500 for appeal brief filing fee; brief in triplicate

Remarks

The Commissioner is hereby authorized to charge any additional fees or credit any overpayments to Deposit Account No. 13-0010 (APIP-1065)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Gene L. Tyler, Reg. No. 35,395
Signature	
Date	May 2, 2005

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Beth Pearson-Naul		
Signature		Date	May 2, 2005

PATENT

BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of: Aiko Hanyu, et al.	§ Appeal No. _____
U.S. Serial No.: 09/810,956	§ Group Art Unit: 1773
Filed: 03/16/2001	§ Examiner: Donald L. Tarazano
For: Heat-seal Films and Method of Manufacture	§ Docket No. COS-822 (APIP-1065)
	§ Date: May 2, 2005

BRIEF FOR APPELLANTS (37 CFR §1.192)

Commissioner for Patents
Alexandria, Virginia 22313-1450

Sir:

Appellants hereby submit their brief on appeal from the decision rendered by the Examiner finally rejecting claims: 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42; in the office action mailed 11/2/2004 (OFFICE ACTION), and confirmed in the Advisory Action mailed 02/08/2005 in furtherance of the Notice of Appeal filed 03/01/2005.

The fees required under 37 CFR §1.17(c) for filing this brief are dealt with in the accompanying Transmittal of Appeal Brief.

This Brief is transmitted in triplicate.

The final page of this brief bears the attorney's signature.

CERTIFICATE OF MAILING BY OF EXPRESS MAIL UNDER 37 CFR §1.10

Express Mail mailing label number: EV460270346US
Date of Deposit: May 2, 2005

I hereby certify that this Appeal Brief, and associated papers are being deposited with the United States Postal Service Express Mail Post Office for delivery to Addressee as service under 37 CFR §1.10 on the date indicated above and is addressed ATTENTION: Board of Patent Appeals and Interferences, MS Appeal Briefs Patent, Commissioner for Patents, Alexandria, Virginia 22313-1450.

Beth Pearson-Naul

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TABLE OF CONTENTS

This Brief contains these items under the following headings, and in the order set forth below (37 CFR §1.192(c)):

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is FINA TECHNOLOGY, INC.

II. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representative, and their assignee are unaware of any other appeals or interferences which will directly affect or would be directly affected by or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

The claims appealed are claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42, which were finally rejected in the Office Action mailed November 2, 2004. The remaining claims: 2-5, 12, 13, 20-23, 26, 27, 31, 32, 34, 39, and 40 have been cancelled.

IV. STATUS OF AMENDMENTS AFTER FINAL

There were amendments requested after the final rejection which were allowed in the Advisor Action mailed on February 8, 2005.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claims on appeal are directed to:

IN INDEPENDENT CLAIM 1 and dependent claims 6-11, and 14-15, a heat-seal polymer film comprising a layer of film formed from a metallocene catalyzed, isotactic ethylene-propylene copolymer as set forth in the specification generally and specifically at locations including, but not limited to page 5, lines 1-20; page 14, lines 14-30; Figure 3A; and Figure 9.

IN INDEPENDENT CLAIM 16 and dependent claims 17-19, 24, 25, and 28, a multiplayer polymer film comprising a polyolefin core lay and at lest one heat-seal layer from a metallocene catalyzed isotactic ethylene–propylene copolymer having a random comonomer distribution as set forth in the specification generally and specifically at locations including, but not limited to page 5, lines 21-27; page 13, lines 13-24; and Example 2 running from page 20, line 11 to page 23 line 9.

IN INDEPENDENT CLAIM 29 and dependent claims 30, 33, 35-38, and 41, a material for use in heat-seal applications comprising a metallocene catalyzed isotactic ethylene-propylene copolymer, as set forth in the specification generally and specifically at locations including, but not limited to page 5, line 28 to page 6, line 15;

IN INDEPENDENT CLAIM 42, a method of forming a heat-seal film, as set forth in the specification at generally and specifically at locations including, but not limited to: page 6, lines 16-19.

VI. GROUNDS FOR REJECTION TO BE REVIEWED FOR APPEAL

The grounds for rejection to be reviewed for appeal are:

1. Whether the Examiner has established that claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are anticipated under 35 U.S.C. §102(b) by JP-11-060833.

2. Whether the Examiner has established that Claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are obvious under 35 U.S.C. §103 as over JP-11-060833.

3. Whether the Examiner has established that Claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are obvious under 35 U.S.C. §103 over EP 0-669-348 in view of '833 or the converse.

VII. ARGUMENTS

GROUND 1

Whether the Examiner has established that claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are anticipated under 35 U.S.C. §102(b) by JP-11-060833. ('833)

It is the Examiner's position that the Japanese patent document teaches monolayer heat sealable films made from a metallocene-catalyzed propylene copolymer and that the polymers produced are isotactic in nature and have random distributions of the comonomer. The Examiner also states that the materials have good seal / melt properties. In the Office Action, the Examiner acknowledged that the claims had a limitation of a seal ignition temperature of less than 125°C (presently amended to 80-125°C), but that a 2 degree difference in melting is not very significant. The Examiner cites *In re Spada*, 15 USPQ2d 1665, 1658 (Fed Cir. 1990) for the proposition that the Applicant has the burden for showing that the anticipation has not occurred.

STANDARDS FOR AN ANTICIPATION REJECTION

The standards for rejecting a claim as anticipated are clear. Anticipation under 35 U.S.C. § 102(b) requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. *In Re Schrieber* 44 USPQ2d 1429, 1431 (Fed. Cir., 1997) (referencing, *Glaxo Inc. v. Novopharm Ltd.* , 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995). "To establish anticipation, [defendant] must show that a prior art reference describes each and every element of a claimed invention." *Bamberger v. Cheruva* 55 USPQ2d 1523, 1534 (Fed Cir. 2000) (citing, *Hybridtech Inc. V. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987)). It is stated in the MPEP that:

> [F]or anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present.

MPEP,§ 706.02(a). The Appellant declares and will presently show that Claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are not anticipated by Shroff.

In the *SPADA* reference, the applicant appears to have had discovered a new property for an existing material. The applicant was polymerizing the same monomers and using the same or similar polymerization techniques (*Id.* at 1657-1658). When invited, the applicant was able to offer no explanation for why his polymer had different properties from that of the prior art. It may be assumed that the Smith prior reference was clearer than the JP-11-060833 with which is being addressed in the present case. For example, at paragraph 8, the Japanese reference appears to perhaps describe the catalysts used as one that could include:

> a cyclpentadienyl group, a susbstiutent cyclopentadienyl group, an indenyl group, a substitution indenyl group, a tetrahydro indenyl group, a substitution tetrahydro indenyl group, a full ONIRU machine [*sic.*] ...

It is not inherent that the metallocene catalysts used in the Japanese reference are the same as the chiral bis-indenyl catalysts enablingly disclosed in the present application at page 9, line 29 and running to page 11, line 15. It is well known that different types of metallocene catalysts can affect polymerizations very differently. Just a substitution at a critical point in the metallocene molecule can cause substantial changes in properties including stereoregularity, ethylene incorporation, xylene solubles, and the like.

In view of this one possible basis for the difference in the polymers of the application, the Applicants assert that the claims of the present invention are not anticipated by the 833 reference. Applicants have amended the independent claims to include a limitation of having a surface with a heat-seal initiation temperature of 80°C to 125°C. The disclosed heat seal range of temperatures for the '833 reference is from 127°C to 136°C. The claims of the present application, as now amended, are clearly outside of the scope of the teachings of the 833 reference. A two degree difference in a seal initiation temperature can be significant in some applications such as packaging where heat may be an issue.

While the gap BETWEEN the ranges may be small, the span of the ranges is large. The 80 to 125°C in the present invention as opposed to the prior art's range if 127-136 is very significant. It is respectfully asserted that none of the claims of the present invention are anticipated by the 833 reference.

GROUND 2

Whether the Examiner has established that claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are obvious under 35 U.S.C. §103 over JP-11-060833

It is the Examiner's position that it would have been obvious to have used higher comonomer contents for applications where a lower melting point is desired.

STANDARDS FOR AN OBVIOUSNESS REJECTION

The standards for rejecting a claim as obvious are clear:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. §103(a). In putting the statutory language to practice, the MPEP states:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on appellant's disclosure.

MPEP §706.02(j) Contents of a 35 U.S.C. 103 Rejection, (citing) In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Federal Circuit uses the Graham factors:

> In order to determine obviousness as a legal matter, four factual inquiries must be made concerning: 1) the scope and content of the prior art; 2) the level of

> ordinary skill in the art; 3) the differences between the claimed invention and the prior art; and 4) secondary considerations of nonobviousness, which in case law is often said to include commercial success, long-felt but unresolved need, failure of others, copying, and unexpected results.

Ruiz v. A. B. Chance Co., 57 USPQ2d 1161, 1165 (Fed. Cir. 2000) *citing* Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 877, 27 USPQ2d 1123, 1128 (Fed. Cir. 1993).

The Examiner, in the §102 rejection states that a 2 degree difference is not significant and is, in fact, within experimental error. It is respectfully submitted that such a difference is significant. The other temperatures in the range are also significant. Further, the present invention is not obvious over the 833 reference because one of ordinary skill in the art of prepare polymer would not have reasonable expectation of success in producing a film with the desired properties of lower seal initiation temperature by adding more comonomers. As is shown by the other references cited by the Examiner, the addition of ethylene to a polymer can be undesirable. The Applicants respectfully assert that the presence of art such as the EP 0-669-348 reference which teaches:

At page 2, lines 20-23:

The random copolymers have sufficient transparency and heat-sealing properties attributable to their low crystallinity and low melting point. The content of 20°C xylene soluble fraction (CXS) in the random copolymer, which has an undesirable property for food wrapping, **extremely increases with the content of ethylene** and/or alpha-olefin.

At page 3, Lines 48-49:

A small quantity of ethylene may be copolymerized in the propylene random copolymer of the invention as long as the ethylene does not damage the physical properties of the resulting copolymer.

Without making the experiment, one of ordinary skill in the art could not know whether the result of adding ethylene to the polymer of the 833 reference would produce a good film with a lower seal initiation temperature or a film with all kinds of problems that would render it useless for important applications such

as food packaging, for example. It is not even clear if it would be an obvious experiment except for the fact of the abundance and cost of ethylene as opposed to other potential comonomers, and obvious to experiment is not obvious under 35 USC §103.

GROUND 3

Whether the Examiner has established that claims 1, 6-11, 14-19, 24, 25, 28-30, 33, 35-38, 41, and 42 are obvious under 35 U.S.C. §103 over EP 0-669-348 in view of '833 or the converse.

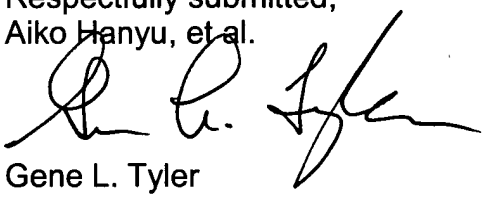
The Examiner states that the 348 reference is cited to teach oriented films and film structures similar to those of the present invention, and it would have been obvious to have used the films of the 833 reference in the applications and structures taught in the 348 reference.

In is important to note the Examiner did not say that it would also have been obvious to increase the ethylene content and notwithstanding the teachings in the '348 reference that it would be "bad" to do so. For the same reasons as already stated above, the claims of the present invention are not obvious over this combination of art. One of ordinary skill in the art would not be motivated to make this combination in view of the teachings regarding ethylene content therein.

VIII. PRAYER FOR RELIEF

It is respectfully submitted that the rejections of the claims have been overcome and/or avoided by the arguments presented above. It is further respectfully requested that the Board reverse the final rejections of the Examiner. The Examiner and/or the Board are encouraged to call the Appellants' attorney at the number below for any reason that may advance prosecution of the case.

Respectfully submitted,
Aiko Hanyu, et al.



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Appendix A

CLAIMS ON APPEAL

CLAIMS ON APPEAL

1. A heat-seal polymer film comprising a layer of film formed from a metallocene catalyzed, isotactic ethylene-propylene copolymer having a random comonomer distribution, the ethylene present in the ethylene-propylene copolymer in an amount of from 1% to 15% by weight wherein the ethylene-propylene copolymer has a seal initiation temperature of 80°C to 125°C.

Claims 2-5 (canceled).

6. The heat-seal polymer film of claim 1, wherein the film has less than 3% haze.

7. The heat-seal polymer film of claim 1, wherein the film has greater than 85% gloss at a 45° incident angle.

8. The heat-seal polymer film of claim 1, wherein the random copolymer has a xylene solubles content of less than 5% by weight.

9. The heat-seal polymer film of claim 1, wherein the layer of film is a cast film.

10. The heat-seal polymer film of claim 1, wherein the layer of film is an oriented film.

11. The heat-seal polymer film of claim 1, wherein the random copolymer has a seal initiation temperature from 110° C to 125°C.

Claims 12 -13 (canceled).

14. The heat-seal polymer film of claim 1, wherein the heat-seal film has an ultimate seal strength that is at least 30% greater than a heat-seal film prepared under similar conditions from a random copolymer of propylene and ethylene

using a Ziegler-Natta catalyst useful in the polymerization of isotactic polypropylene.

15. The heat-seal polymer film of claim 1, wherein the heat-seal film is a cast film and provides a hot-tack seal strength above 0.4 N/cm at a temperature range of from 60°C to 130°C.

16. A multi-layer polymer film comprising a polyolefin core layer and at least one heat-seal layer formed from a metallocene catalyzed. isotactic ethylene-propylene copolymer having a random comonomer distribution, the ethylene present in the ethylene-propylene copolymer in an amount of from 1% to 15% by weight, wherein the ethylene-propylene copolymer has a seal initiation temperature of 80°C to 125°C that is joined to the polyolefin core layer.

17. The multi-layer polymer film of claim 16, wherein the core layer and heat-seal layer are coextruded together.

18. The multi-layer polymer film of claim 16, wherein the heat-seal layer has a thickness that is less than the thickness of the core layer.

19. The multi-layer polymer film of claim 16, wherein the heat-seal layer has a thickness that is 20% or less than the thickness of the core layer.

Claims 20-23 (canceled).

24. The multi-layer polymer film of claim 16, wherein the heat-seal layer provides an ultimate seal strength that is at least 30% greater than a heat-seal layer prepared under similar conditions from a random copolymer of propylene and ethylene using a Ziegler-Natta catalyst useful in the polymerization of isotactic polypropylene.

25. The multi-layer polymer film of claim 16, wherein the random copolymer has a seal initiation of from 110°C to 125°C.

Claims 26 - 27 (canceled).

28. The multi-layer polymer film of claim 16, wherein the heat-seal layer is a cast film layer and provides a hot-tack seal strength above 0.4 N/cm at a temperature range of from 60°C to 130°C.

29. A material for use in heat-seal applications comprising a metallocene catalyzed. isotactic ethylene-propylene copolymer having a random comonomer distribution, the ethylene present in the ethylene-propylene copolymer in an amount of from 1% to about 15% by weight, wherein the ethylene-propylene copolymer has a seal initiation temperature of 80°C to 125°C.

30. The material of claim 29, wherein the material provides a heat-seal film having an ultimate seal strength that is at least 30% greater than a heat-seal film prepared under similar conditions from a copolymer of propylene and ethylene using a Ziegler-Natta catalyst useful in the polymerization of isotactic polypropylene.

Claims 31-32 (canceled).

33. The material of claim 29, wherein the material provides a heat-seal film having a seal initiation temperature of from 80°C to 125°C defined at a seal strength of 200 g/inch.

Claim 34 (canceled).

35. The material of claim 29, wherein the material provides a heat-seal film having less than 3% haze.

36. The material of claim 29, wherein the material provides a heat-seal film having greater than 85% gloss at a 45° incident angle.

37. The material of claim 29, wherein the random copolymer has a xylene solubles content of less than 5% by weight.

38. The material of claim 29, wherein the random copolymer has a seal initiation of from 110°C to 125°C.

Claims 39-40 (canceled).

41. The material of claim 29, wherein the material provides a cast heat-seal film having a hot-tack seal strength above 0.4 N/cm at a temperature range of from 60°C to 130°C.

42. A method of forming a heat-seal film comprising: providing a metallocene catalyzed, isotactic ethylene-propylene copolymer having a random comonomer distribution, the ethylene present in the ethylene-propylene copolymer in an amount of from 1% to 15% by weight wherein the ethylene-propylene copolymer has a seal initiation temperature of 80°C to 125°C and forming the copolymer into a layer of film.

LEXSEE 814 F.2D 628

Verdegaal Brothers, Inc., William Verdegaal, George Verdegaal, Appellees, v. Union Oil Company of California, BREA Agricultural Services, Inc., Appellants

No. 86-1258

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

814 F.2d 628; 1987 U.S. App. LEXIS 175; 2 U.S.P.Q.2D (BNA) 1051

March 12, 1987, Decided

PRIOR HISTORY: [1]**

Appealed from U.S. District Court for the Eastern District of California, Judge Coyle.

DISPOSITION:

Reversed.

LexisNexis(R) Headnotes

COUNSEL:

Andrew J. Belansky, Christie, Parker & Hale, argued for Appellants. With him on the brief was David A. Dillard.

John P. Sutton, Limbach, Limbach & Sutton, argued for Appellee. With him on the brief was Michael E. Dergosits.

JUDGES:

Markey, Chief Judge, and Davis and Nies, Circuit Judges.

OPINION:

[*630] NIES, Circuit Judge.

Union Oil Company of California and Brea Agricultural Services, Inc. (collectively Union Oil) appeal from a judgment of the United States District Court for the Eastern District of California, No. CV-F-83-68 REC, entered on a jury verdict which declared U.S. Patent No. *4,310,343* (*'343*), owned by Verdegaal Brothers, Inc., "valid" and claims 1, 2, and 4 thereof infringed by Union Oil. Union Oil's motion for judgment notwithstanding the verdict (JNOV) was denied. We reverse.

I

BACKGROUND

The General Technology

The patent in suit relates to a process for making certain known urea-sulfuric acid liquid fertilizer products. These products are made by reacting water, urea (a nitrogen-containing chemical), and sulfuric acid (a sulfur-containing **[**2]** chemical) in particular proportions. The nomenclature commonly used by the fertilizer industry refers to these fertilizer products numerically according to the percentages by weight of four fertilizer constituents in the following order: nitrogen, phosphorous, potassium, and sulfur. Thus, for example, a fertilizer containing 28% nitrogen, no phosphorous or potassium, and 9% sulfur is expressed numerically as 28-0-0-9.

The Process of the '343 Patent

The process disclosed in the *'343* patent involves the chemical reaction between urea and sulfuric acid, which is referred to as an exothermic reaction because it gives off heat. To prevent high temperature buildup, the reaction is conducted in the presence of a nonreactive, nutritive heat sink which will absorb the heat of reaction. Specifically, a previously-made batch of liquid fertilizer -- known as a "heel" -- can serve as the heat sink to which more reactants are added. Claims 1 and 2 are representative:

> 1. In a process for making a concentrated liquid fertilizer by reacting sulfuric acid

and urea, to form an end product, the improvement comprising:

> a. providing a non-reactive, nutritive heat sink, capable **[**3]** of dissipating the heat of urea and sulfuric acid, in an amount at least 5% of the end product,
> b. adding water to the heat sink in an amount not greater than 15% of the end product,
> c. adding urea to the mixture in an amount of at least 50% of the total weight of the end product,
> d. adding concentrated sulfuric acid in an amount equal to at least 10% of the total weight of the end product.

2. The process of claim 1 wherein the heat sink is recycled liquid fertilizer.

Procedural History

Verdegaal brought suit against Union Oil in the United States District Court for the Eastern District of California charging that certain processes employed by Union Oil for making liquid fertilizer products infringed all claims of its *'343* patent. Union Oil defended on the grounds of noninfringement and patent invalidity under *35 U.S.C. § § 102,* 103. The action was tried before a jury which returned a verdict consisting of answers to five questions. Pertinent here are its answers that the *'343* patent was "valid" over the prior art, and that certain of Union Oil's processes infringed claims 1, 2, and 4 of the patent. None were found to infringe **[**4]** claims 3 or 5. Based on the jury's verdict, the district court entered judgment in favor of Verdegaal.

Having unsuccessfully moved for a directed verdict under *Fed. R. Civ. P. 50(a)*, Union Oil timely filed a motion under Rule 50(b) for JNOV seeking a judgment that the claims of the *'343* patent were invalid **[*631]** under sections 102 and 103. The district court denied the motion without opinion.

II

ISSUE PRESENTED

Did the district court err in denying Union Oil's motion for JNOV with respect to the validity of claims 1, 2, and 4 of the *'343* patent?

III

Standard of Review

When considering a motion for JNOV a district court must: (1) consider all of the evidence; (2) in a light most favorable to the non-moving party; (3) drawing all reasonable inferences favorable to that party; (4) without determining credibility of the witnesses; and (5) without substituting its choice for that of the jury's in deciding between conflicting elements of the evidence. *Railroad Dynamics, Inc. v. A. Stucki Co., 727 F.2d 1506, 1512-13, 220 U.S.P.Q. (BNA) 929, 936* (Fed. Cir. **[**5]**), *cert. denied, 469 U.S. 871, 83 L. Ed. 2d 150, 105 S. Ct. 220, 224 U.S.P.Q. (BNA) 520 (1984); Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1546, 220 U.S.P.Q. (BNA) 193, 197 (Fed. Cir. 1983).* A district court should grant a motion for JNOV only when it is convinced upon the record before the jury that reasonable persons could not have reached a verdict for the nonmoving party. *Railroad Dynamics, 727 F.2d at 1513, 220 U.S.P.Q. (BNA) at 936; Connell, 722 F.2d at 1546, 220 U.S.P.Q. (BNA) at 197.*

To reverse the district court's denial of the motion for JNOV, Union Oil must convince us that either the jury's factual findings are not supported by substantial evidence, or, if they are, that those findings cannot support the legal conclusions which necessarily were drawn by the jury in forming its verdict. *See Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893, 221 U.S.P.Q. (BNA) 669, 673* (Fed. Cir.), *cert. denied, 469 U.S. 857, 83 L. Ed. 2d 120, 105 S. Ct. 187 (1984), Railroad Dynamics, 727 F.2d at 1512, 220 U.S.P.Q. (BNA) at 936.* **[**6]** Substantial evidence is more than just a mere scintilla; it is such relevant evidence from the record taken as a whole as a reasonable mind might accept as adequate to support the finding under review. *Consolidated Edison Co. v. NLRB, 305 U.S. 197, 229, 83 L. Ed. 126, 59 S. Ct. 206 (1938); Perkin-Elmer, 732 F.2d at 893, 221 U.S.P.Q. (BNA) at 673; SSIH Equip. S.A. v. U.S. Int'l Trade Comm'n, 718 F.2d 365, 371 n.10, 218 U.S.P.Q. (BNA) 678, 684 n.10 (Fed. Cir. 1983).* A trial court's denial of a motion for JNOV must stand unless the evidence is of such quality and weight that reasonable and fair-minded persons in the exercise of impartial judgment could not reasonably return the jury's verdict. *Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 758, 221 U.S.P.Q. (BNA) 473, 477 (Fed. Cir. 1984).*

Our precedent holds that the presumption of validity afforded a U.S. patent by *35 U.S.C. § 282* requires that the **[**7]** party challenging validity prove the facts

establishing invalidity by clear and convincing evidence. *American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1360, 220 U.S.P.Q. (BNA) 763, 770* (Fed. Cir.), *cert. denied, 469 U.S. 821, 83 L. Ed. 2d 41, 105 S. Ct. 95 (1984).* Thus, the precise question to be resolved in this case is whether Union Oil's evidence is so clear and convincing that reasonable jurors could only conclude that the claims in issue were invalid. *See Perkin-Elmer, 732 F.2d at 893, 221 U.S.P.Q. (BNA) at 673; Railroad Dynamics, 727 F.2d at 1511, 220 U.S.P.Q. (BNA) at 935.*

Anticipation

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715, 223 U.S.P.Q. (BNA) 1264, 1270 (Fed. Cir. 1984); Connell, 722 F.2d at 1548, 220 U.S.P.Q. (BNA) at 198; Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771, 218 U.S.P.Q. (BNA) 781, 789 (Fed. Cir. 1983),* **[**8]** *cert. denied, 465 U.S. 1026, 79 L. Ed. 2d 687, 104 S. Ct. 1284, 224 U.S.P.Q. (BNA) 520 (1984).* Union Oil asserts that the subject claims of the *'343* patent **[*632]** are anticipated under *35 U.S.C. § 102*(e) n1 by the teachings found in the original application for U.S. Patent No. *4,315,763* to Stoller, which the jury was instructed was prior art.

n1 Section 102(e) provides:

> A person shall be entitled to a patent unless -- . . .
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.
>
> . . .

From the jury's verdict of patent validity, we must presume **[**9]** that the jury concluded that Union Oil failed to prove by clear and convincing evidence that claims 1, 2, and 4 were anticipated by the Stoller patent. *See Perkin-Elmer, 732 F.2d at 893, 221 U.S.P.Q. (BNA) at 673; Railroad Dynamics, 727 F.2d at 1516, 220 U.S.P.Q. (BNA) at 939.* Under the instructions of this case, this conclusion could have been reached only if the jury found that the Stoller patent did not disclose each and every element of the claimed inventions. Having reviewed the evidence, we conclude that substantial evidence does not support the jury's verdict, and, therefore, Union Oil's motion for JNOV on the grounds that the claims were anticipated should have been granted.

The Stoller patent discloses processes for making both urea-phosphoric acid and urea-sulfuric acid fertilizers. Example 8 of Stoller specifically details a process for making 30-0-0-10 urea-sulfuric acid products. There is no dispute that Example 8 meets elements b, c, and d of claim 1, specifically the steps of adding water in an amount not greater than 15% of the product, urea in an amount of at least 50% of the product, and concentrated sulfuric acid in an amount **[**10]** of at least 10% of the product. Verdegaal disputes that Stoller teaches element a, the step of claim 1 of "providing a non-reactive, nutritive heat sink." As set forth in claim 2, the heat sink is recycled fertilizer. n2

> n2 Claim 4 is written in terms of approximate percentages of all reactants by weight of the end product. No argument is made that the process of claim 4 would result in a fertilizer product any different from that disclosed by Example 8 of Stoller.

The Stoller specification, beginning at column 7, line 30, discloses:

> Once a batch of liquid product has been made, it can be used as a base for further manufacture. This is done by placing the liquid in a stirred vessel of appropriate size, adding urea in sufficient quantity to double the size of the finished batch, adding any water required for the formulation, and slowly adding the sulfuric acid while stirring. Leaving a heel of liquid in the vessel permits further manufacture to be conducted in a stirred fluid mass.

This portion **[**11]** of the Stoller specification explicitly teaches that urea and sulfuric acid can be added to recycled fertilizer, i.e., a heel or base of previously-made product. Dr. Young, Union Oil's expert, so testified. Verdegaal presented no evidence to the contrary.

Verdegaal first argues that Stoller does not anticipate because in Stoller's method sulfuric acid is

added *slowly*, whereas the claimed process allows for rapid addition. However, there is no limitation in the subject claims with respect to the rate at which sulfuric acid is added, and, therefore, it is inappropriate for Verdegaal to rely on that distinction. *See SSIH, 718 F.2d at 378, 218 U.S.P.Q. (BNA) at 689.* It must be assumed that slow addition would not change the claimed process in any respect including the function of the recycled material as a heat sink.

Verdegaal next argues that the testimony of Union Oil's experts with respect to what Stoller teaches could well have been discounted by the jury for bias. Discarding that testimony does not eliminate the reference itself as evidence or its uncontradicted disclosure that a base of recycled fertilizer in a process may be used to make more of the product. **[**12]**

Verdegaal raises several variations of an argument, all of which focus on the **[*633]** failure of Stoller to explicitly identify the heel in his process as a "heat sink." In essence, Verdegaal maintains that because Stoller did not recognize the "inventive concept" that the heel functioned as a heat sink, Stoller's process cannot anticipate. This argument is wrong as a matter of fact and law. Verdegaal's own expert, Dr. Bahme, admitted that Stoller discussed the problem of high temperature caused by the exothermic reaction, and that the heel could function as a heat sink. n3 In any event, Union Oil's burden of proof was limited to establishing that Stoller disclosed the same process. It did not have the additional burden of proving that Stoller recognized the heat sink capabilities of using a heel. Even assuming Stoller did not recognize that the heel of his process functioned as a heat sink, that property was inherently possessed by the heel in his disclosed process, and, thus, his process anticipates the claimed invention. *See In re Oelrich, 666 F.2d 578, 581, 212 U.S.P.Q. (BNA) 323, 326 (CCPA 1981); In re Swinehart, 58 C.C.P.A. 1027, 439 F.2d 210, 212-13, 169 U.S.P.Q. (BNA) 226, 229 (CCPA 1971).* **[**13]** The pertinent issues are whether Stoller discloses the process of adding urea and sulfuric acid to a previously-made batch of product, and whether that base would in fact act as a heat sink. On the entirety of the record, these issues could only be resolved in the affirmative.

> n3 There is no dispute that the percentage of heel described in Stoller meets the percentage of heat sink required by the claims.

On appeal Verdegaal improperly attempts to attack the status of the Stoller patent as prior art, stating in its brief:

> Verdegaal also introduced evidence at trial that the Stoller patent is not prior art under *35 U.S.C. § § 102*(e)/103. Professor Chisum testified that the Stoller patent, in his opinion, was not prior art. . . . This conclusion finds support in *In re Wertheim, 646 F.2d 527, 209 U.S.P.Q. (BNA) 554 (CCPA 1981),* and 1 *Chisum on Patents § 3.07*[3].

Appellee Brief at 27 (record cite omitted). Seldom have we encountered such blatant distortion **[**14]** of the record. A question about the status of the Stoller disclosure as prior art did arise at trial. Union Oil asserted that, even though the Stoller patent issued after the *'343* patent, Stoller was prior art under section 102(e) as of its filing date which was well before the filing date of Verdegaal's application. Professor Chisum never testified that the Stoller patent was *not* prior art, but rather, stated that *he did not know* whether it was prior art. An excerpt from the pertinent testimony leaves no doubt on this point:

> Q. (Mr. Sutton): And do you know whether the Stoller patent is prior art to the application of the Verdegaal patent?
> A. (Prof. Chisum): I don't know that it is, no.

We find it even more incredible that Verdegaal would attempt to raise an issue with respect to the status of the Stoller patent given that the case was submitted to the jury with the instruction that the original Stoller patent application was prior art. n4 Verdegaal made no objection to that instruction below, and in its appeal briefs, the instruction is cavalierly ignored.

> n4 The jury instruction read:
>
> > Stoller filed two patent applications -- an original application on October 30th, 1978, and a second on February 7th, 1980. Under the patent laws, the claims of the *343* patent are invalid if you find that the original application (Exhibit BL) anticipates the process claimed in the *343* patent.

[15]**

In sum, Verdegaal is precluded from arguing that the Stoller patent should not be considered prior art. *See Fed. R. Civ. P. 51*; *Weinar v. Rollform Inc., 744 F.2d 797, 808, 223 U.S.P.Q. (BNA) 369, 375 (Fed. Cir. 1984), cert. denied, 470 U.S. 1084, 105 S. Ct. 1844, 85 L. Ed. 2d 143 (1985); Bio-Rad Laboratories, Inc. v. Nicolet Instrument Corp., 739 F.2d 604, 615, 222 U.S.P.Q. (BNA) 654, 662* (Fed. Cir.), *cert. denied, 469 U.S. 1038, 83 L. Ed. 2d 405, 105 S. Ct. 516 (1984).* n5

n5 Union Oil also argues that Verdegaal's counsel misled the jury by its closing rebuttal argument:

> But I think it's important to keep in mind that [Stoller] couldn't have been a prior patent because it issued a month after the Verdegaal patent had issued.

We disapprove of Verdegaal's tactic which would form the basis for a grant of a motion for a new trial but for our conclusion that outright reversal of the ruling on the motion for JNOV is in order.

[16]**

[*634] After considering the record taken as a whole, we are convinced that Union Oil established anticipation of claims 1, 2, and 4 by clear and convincing evidence and that no reasonable juror could find otherwise. Consequently, the jury's verdict on validity is unsupported by substantial evidence and cannot stand. Thus, the district court's denial of Union Oil's motion for JNOV must be reversed.

Conclusion

Because the issues discussed above are dispositive of this case, we do not find it necessary to reach the other issues raised by Union Oil. n6 In accordance with this opinion, we reverse the portion of the judgment entered on the jury verdict upholding claims 1, 2, and 4 of the *'343* patent as valid under section 102(e) and infringed.

n6 It should not be inferred that all of these issues were properly before us. Union Oil appears to assume that on appeal it may dispute the resolution of any *issue* which is denominated an "issue of law" even though it was not raised in its motion for JNOV. This is incorrect. *See Railroad Dynamics, 727 F.2d at 1511, 220 U.S.P.Q. (BNA) at 934.*

[17]**

REVERSED.

LEXSEE 44 USPQ2D 1429

IN RE SCHREIBER

97-1201

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

128 F.3d 1473; 1997 U.S. App. LEXIS 29099; 44 U.S.P.Q.2D (BNA) 1429

October 23, 1997, Decided

SUBSEQUENT HISTORY: [**1] Suggestion for Rehearing In Banc Declined and Rehearing Denied December 17, 1997, Reported at: *1997 U.S. App. LEXIS 37546.*

PRIOR HISTORY: Appealed from: Patent and Trademark Office Board of Patent Appeals and Interferences. (Serial No. 08/187,111).

DISPOSITION: AFFIRMED.

LexisNexis(R) Headnotes

COUNSEL: Joseph B. Taphorn, of Poughkeepsie, New York, argued for appellant.

Joseph G. Piccolo, Associate Solicitor, Office of the Solicitor, Patent and Trademark Office, Department of Commerce, of Arlington, Virginia, argued for the appellee. With him on the brief were Nancy J. Linck, Solicitor, Albin F. Drost, Deputy Solicitor, and Karen A. Buchanan, Associate Solicitor.

JUDGES: Before NEWMAN, PLAGER, and BRYSON, Circuit Judges. Opinion for the court filed by Circuit Judge BRYSON. Dissenting opinion filed by Circuit Judge NEWMAN.

OPINIONBY: BRYSON

OPINION: [*1474] BRYSON, Circuit Judge.

Stephen B. Schreiber appeals the decision of the United States Patent and Trademark Office's Board of Patent Appeals and Interferences sustaining a final rejection of four claims of Schreiber's patent application. We affirm.

I

Schreiber's patent application claims a device for dispensing popped popcorn. The device is conically shaped with a large opening that fits on a container and a smaller opening at the opposite end that allows popped popcorn to pass through when the device is attached [**2] to a popcorn container and turned upside down. An embodiment disclosed in Schreiber's patent application is depicted below. [*1475]

[SEE ILLUSTRATION IN ORIGINAL].

Schreiber filed a number of claims, and the examiner allowed many of the claims. Claims 1, 2, 14, and 15 were finally rejected, however, and those claims are the subjects of this appeal. Claim 1 recites:

> A dispensing top for passing only several kernels of a popped popcorn at a time from an open-ended container filled with popped popcorn, having a generally conical shape and an opening at each end, the opening at the reduced end allows several kernels of popped popcorn to pass through at the same time, and means at the enlarged end of the top to embrace the open end of the container, the taper of the top being uniform and such as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake of a package when the top is mounted on the container.

Claim 2 is similar to claim 1 but additionally recites that the top comprises a "means at the reduced end of the top to close-off the opening thereat." The other two claims, claims 14 and 15, depend from claims [**3] 1 and 2,

respectively. Schreiber does not argue that claims 14 and 15 are patentable if claims 1 and 2 are not. Accordingly, because we affirm the rejection of claims 1 and 2, we need not address claims 14 and 15.

Claim 1 was rejected by the examiner under *35 U.S.C. § 102*(b) as being anticipated by Swiss Patent No. 172,689 to Harz. The Harz patent discloses "a spout for nozzle-ready canisters," which may be tapered inward in a conical fashion, and it states that the spout is useful for purposes such as dispensing oil from an oil can. The examiner explained that Harz discloses a conical dispensing top for an open-ended container and concluded that "the Harz top is clearly capable of dispensing popped popcorn." Figure 5 from Harz is depicted below. **[*1476]**

[SEE ILLUSTRATION IN ORIGINAL].

Claim 2 was rejected by the examiner under *35 U.S.C. § 103* as being unpatentable over the combination of Harz and U.S. Patent No. *3,537,623* to Fisher. The examiner stated that although Harz does not disclose a "means at the reduced end of the top to close-off the opening thereat," Fisher does. The examiner concluded that it would have been obvious to one of ordinary skill in the art to modify **[**4]** Harz in view of Fisher in order to "seal[ ] the container contents from contaminates."

In response to the patent examiner's rejections, Schreiber submitted a declaration stating that the conical dispensing top depicted in figure 5 of Harz was incapable of "jamming up the popped popcorn before the end of the cone and permitting the dispensing of only a few kernels at a shake of a package when the top is mounted on the container." The examiner did not enter that declaration in the record because he believed it had not been properly submitted. When Schreiber appealed to the Board, the Board remanded the case to the examiner to consider the declaration. On remand, the examiner considered the declaration but found that it did not provide sufficient information to support Schreiber's assertion that a dispensing top built according to Harz does not inherently possess the functionally defined limitations recited in the claims.

Schreiber again appealed to the Board, which upheld the rejections. The Board first found that Harz discloses every limitation recited in claim 1. Several of the recitations in the claims, the Board concluded, merely set forth the function and intended use **[**5]** of the top and therefore did not require any structural feature other than those taught by Harz. The Board found that the structure disclosed by Harz is inherently capable of dispensing popcorn in the manner set forth in the claims, and that Schreiber's declaration did not provide enough details to prove that the structure disclosed by Harz is incapable of performing the claimed functions of Schreiber's invention.

In response to Schreiber's argument that the conical dispensing top disclosed in Harz is designed to dispense liquids such as oil, rather than solid items such as popcorn, and that it is not large enough to pass popcorn kernels, the Board noted that the Harz patent referred to the use of the claimed device for lubricating oil only as an "example," and found that one of skill in the art "would perceive the top of Harz as being of broader application." The Board further found that the dispensing top disclosed in Harz "is of a relative size and has a taper which would inherently permit popped popcorn kernels to jam up before the end of the cone and permit the dispensing of only a few kernels at a **[*1477]** shake of the package" when the top is mounted on a popped popcorn container. **[**6]** Accordingly, the Board concluded that "all the limitations of claim 1 are found in Harz, either expressly or under the principles of inherency, and this claim is clearly anticipated thereby."

As for claim 2, the Board found that Fisher disclosed a means for closing off the smaller end of a conically shaped top and further found that it would have been obvious to one of ordinary skill in the art to provide a close-off mechanism for a top of the sort disclosed by Harz, to prevent dirt and other contaminating matter from entering the opening in the device. Schreiber appeals both of the Board's determinations.

II

Schreiber first argues that Harz does not anticipate claim 1. To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. See *Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 U.S.P.Q.2D (BNA) 1565, 1567 (Fed. Cir. 1995).* Anticipation is an issue of fact, see *In re Graves, 69 F.3d 1147, 1151, 36 U.S.P.Q.2D (BNA) 1697, 1700 (Fed. Cir. 1995); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677, 7 U.S.P.Q.2D (BNA) 1315, 1317 (Fed. Cir. 1988),* and the question whether a claim limitation is inherent in a **[**7]** prior art reference is a factual issue on which evidence may be introduced, see *Continental Can Co. USA v. Monsanto Co., 948 F.2d 1264, 1268, 20 U.S.P.Q.2D (BNA) 1746, 1749 (Fed. Cir. 1991).*

There is no dispute that the structural limitations recited in Schreiber's application are all found in the Harz reference upon which the examiner and the Board relied. Thus, to use the terms found in Schreiber's claim 1, Harz discloses a "dispensing top" that has "a generally conical shape and an opening at each end," and "means at the

enlarged end of the top to embrace the open end of the container, the taper of the top being uniform." Schreiber argues, however, that Harz does not disclose that such a structure can be used to dispense popcorn from an open-ended popcorn container.

Although Schreiber is correct that Harz does not address the use of the disclosed structure to dispense popcorn, the absence of a disclosure relating to function does not defeat the Board's finding of anticipation. It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable. See *In re Spada, 911 F.2d 705, 708, 15 U.S.P.Q.2D (BNA) 1655, 1657 (Fed.* **[**8]** *Cir. 1990)* ("The discovery of a new property or use of a previously known composition, even when that property and use are unobvious from prior art, can not impart patentability to claims to the known composition."); *Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 782, 227 U.S.P.Q. (BNA) 773, 778 (Fed. Cir. 1985)* (composition claim reciting a newly discovered property of an old alloy did not satisfy section 102 because the alloy itself was not new); *In re Pearson, 494 F.2d 1399, 1403, 181 U.S.P.Q. (BNA) 641, 644 (CCPA 1974)* (intended use of an old composition does not render composition claim patentable); *In re Zierden, 56 C.C.P.A. 1223, 411 F.2d 1325, 1328, 162 U.S.P.Q. (BNA) 102, 104 (CCPA 1969)* ("Mere statement of a new use for an otherwise old or obvious composition cannot render a claim to the composition patentable."); *In re Sinex, 50 C.C.P.A. 1004, 309 F.2d 488, 492, 135 U.S.P.Q. (BNA) 302, 305 (CCPA 1962)* (statement of intended use in an apparatus claim failed to distinguish over the prior art apparatus); *In re Hack, 44 C.C.P.A. 954, 245 F.2d 246, 248, 114 U.S.P.Q. (BNA) 161, 162 (CCPA 1957)* ("the grant of a patent on a composition or a machine cannot be predicated on a new use of that machine or composition"); *In re Benner, 36 C.C.P.A. 1081, 174 F.2d 938, 942, 82* **[**9]** *U.S.P.Q. 49, 53 (CCPA 1949)* ("no provision has been made in the patent statutes for granting a patent upon an old product based solely upon discovery of a new use for such product"). Accordingly, Schreiber's contention that his structure will be used to dispense popcorn does not have patentable weight if the structure is already known, regardless of whether it has ever been used in any way in connection with popcorn.

Schreiber makes the closely related argument that Harz does not anticipate claim 1 because Harz is non-analogous art to which one of ordinary skill in the art would not have looked in addressing the problem of dispensing tops for popped popcorn containers. **[*1478]** However, the question whether a reference is analogous art is irrelevant to whether that reference anticipates. See *In re Self, 671 F.2d 1344, 1350, 213 U.S.P.Q. (BNA) 1, 7 (CCPA 1982).* A reference may be from an entirely different field of endeavor than that of the claimed invention or may be directed to an entirely different problem from the one addressed by the inventor, yet the reference will still anticipate if it explicitly or inherently discloses every limitation recited in the claims.

Schreiber further argues that the functional limitations of his **[**10]** claim distinguish it from Harz. In particular, Schreiber points to the recitation that the claimed top "allows several kernels of popped popcorn to pass through at the same time," and that the taper of the top is such "as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake of a package when the top is mounted on the container."

A patent applicant is free to recite features of an apparatus either structurally or functionally. See *In re Swinehart, 58 C.C.P.A. 1027, 439 F.2d 210, 212, 169 U.S.P.Q. (BNA) 226, 228 (CCPA 1971)* ("There is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims."). Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *Swinehart, 439 F.2d at 213, 169 U.S.P.Q. (BNA) at 228:*

> where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter **[**11]** shown to be in the prior art does not possess the characteristic relied on.

See also *In re Hallman, 655 F.2d 212, 215, 210 U.S.P.Q. (BNA) 609, 611 (CCPA 1981); In re Ludtke, 58 C.C.P.A. 1159, 441 F.2d 660, 663-64, 169 U.S.P.Q. (BNA) 563, 565-67 (CCPA 1971).*

The examiner and the Board both addressed the question whether the functional limitations of Schreiber's claim gave it patentable weight and concluded that they did not, because those limitations were found to be inherent in the Harz prior art reference. To begin with, contrary to the characterization in the dissent, nothing in Schreiber's claim suggests that Schreiber's container is "of a different shape" than Harz's. In fact, as shown above, an embodiment according to Harz (Fig. 5) and the embodiment depicted in figure 1 of Schreiber's application have the same general shape. For that reason, the examiner was justified in concluding that the opening of a conically shaped top as disclosed by Harz is

inherently of a size sufficient to "allow[] several kernels of popped popcorn to pass through at the same time" and that the taper of Harz's conically shaped top is inherently of such a shape "as to by itself jam up the popped popcorn before the end **[**12]** of the cone and permit the dispensing of only a few kernels at a shake of a package when the top is mounted on the container." The examiner therefore correctly found that Harz established a prima facie case of anticipation.

At that point, the burden shifted to Schreiber to show that the prior art structure did not inherently possess the functionally defined limitations of his claimed apparatus. See *In re Spada, 911 F.2d at 708, 15 U.S.P.Q.2D (BNA) at 1658; In re King, 801 F.2d 1324, 1327, 231 U.S.P.Q. (BNA) 136, 138-39 (Fed. Cir. 1986); In re Best, 562 F.2d 1252, 1254-55, 195 U.S.P.Q. (BNA) 430, 433 (CCPA 1976).* The Board found that Schreiber failed to do so, and we agree. Schreiber's declaration asserts that he built a conically shaped top according to figure 5 of Harz and that it was too small to jam and dispense popcorn as recited in the claim. The declaration, however, does not specify the dimensions of either the dispensing top that was tested or the popcorn that was used.

Moreover, the Board found as a factual matter that the top disclosed in figure 5 of the Harz patent "is capable of functioning to dispense kernels of popped popcorn in the manner set forth in claim 1." Starting with Schreiber's **[**13]** assumption that Harz should be limited to use as an attachment to an oil can, the Board scaled figure 5 to the proportions necessary to fit the Harz container on top of a standard one-quart oil can, as Schreiber suggested in his request for reconsideration. After scaling the Harz figure in that manner, the Board found that the Harz dispenser **[*1479]** would be capable of dispensing popcorn in the manner set forth in claim 1 of Schreiber's application.

The dissenting opinion incorrectly states that the Board "used Mr. Schreiber's invention as a template" in determining that the Harz dispenser anticipates Schreiber's invention. In fact, the Board simply scaled the dispenser illustrated in Harz figure 5 up to the size necessary to fit a standard oil can, without changing the proportions of the figure in any way. (The top depicted in figure 5 of the Harz patent was obviously not intended to be a full-sized representation of the Harz invention, any more than the top depicted in figure 1 of Schreiber's application was intended to be a full-sized representation of his invention.) The portion of the dissenting opinion addressed to this point is therefore based on a false premise - that the prior **[**14]** art device was "altered by the Board and then found to anticipate a different invention in whose image it was recreated." The Board's finding that the scaled-up version of figure 5 of Harz would be capable of performing all of the functions recited in Schreiber's claim 1 is a factual finding, which has not been shown to be clearly erroneous. On this ground alone, the Board's anticipation ruling must be upheld.

In any event, however, it is not enough for Schreiber to contend that a top built according to the proportions of figure 5 of Harz is incapable of performing the jamming and dispensing functions. The figures from Harz were provided only as "design examples of the invention"; the disclosure of the Harz patent is thus much broader than the precise conical shape disclosed in figure 5. Moreover, contrary to Schreiber's suggestion, the structure disclosed in Harz is not limited to use as an oil can dispenser. While that use is given as the principal example of the uses to which the invention could be put, nothing in the Harz patent suggests that the invention is in any way limited to that use. In sum, Schreiber's declaration fails to show that Harz inherently lacks the functionally **[**15]** defined limitations recited in claim 1 of the application. Accordingly, we agree with the Board that Schreiber has failed to rebut the prima facie case of anticipation identified by the examiner. The Board's factual finding on the issue of anticipation is therefore affirmed.

III

Schreiber also challenges the Board's finding that claims 2 and 15 are unpatentable under *35 U.S.C. § 103* as being obvious over the combination of Harz and Fisher. Schreiber argues that the combination of Harz and Fisher does not disclose all the limitations of claim 2 because neither Harz nor Fisher discloses the functionally defined features of the top. That argument is without merit because, as we have already noted, Harz discloses those functionally defined limitations.

Schreiber also argues that Fisher does not provide the function that the "means for closing off" in Schreiber's application provides. The functions Schreiber cites - enabling a person to carry a popped-popcorn package in a non-upright position without spillage, keeping the popcorn warm, and facilitating the mixing of ingredients - are not recited as part of the means-plus-function clause in claim 2. Accordingly, those functions cannot **[**16]** impart patentability to the claim.

Schreiber further argues that Fisher is non-analogous art because Fisher relates to pouring oil from an oil can whereas Schreiber's invention relates to popcorn dispensing. That argument was not raised before the Board and we therefore decline to consider it for the first time on appeal. Even if we were to consider that argument, however, we note that Schreiber

acknowledges in the specification that the prior art pertinent to his invention includes patents relating to dispensing fluids. Schreiber therefore may not now argue that such patents are non-analogous art. See *Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1570, 7 U.S.P.Q.2D (BNA) 1057, 1063 (Fed. Cir. 1988); In re Fout, 675 F.2d 297, 300, 213 U.S.P.Q. (BNA) 532, 535 (CCPA 1980); In re Wood, 599 F.2d 1032, 1036, 202 U.S.P.Q. (BNA) 171, 174 (CCPA 1979); In re Nomiya, 509 F.2d 566, 571, 184 U.S.P.Q. (BNA) 607, 611-12 (CCPA 1975).* Accordingly, we find no error in the Board's **[*1480]** determination that claims 2 and 15 would have been obvious.

AFFIRMED.

DISSENTBY: NEWMAN

DISSENT: NEWMAN, Circuit Judge, dissenting.

I respectfully dissent. The panel majority affirms the PTO position that the express limitations **[**17]** of the claims are irrelevant when dealing with a rejection on the ground of "anticipation." The court thus departs from the rules of claim interpretation on which we have placed so much weight. The Federal Circuit has held, over and over, that every claim limitation is important and none can be ignored -- and now proceeds to ignore several express limitations. Thus the panel incongruously holds that a claim that requires, explicitly and precisely, a container of popcorn and a dispenser that passes only a few kernels of popcorn before jamming, is "anticipated" by an oil can of a different shape as illustrated in a reference that neither shows nor suggests a container filled with popcorn or the jamming of the dispenser upon dispensing the popcorn. I feel for those who tread the arcane path of patent soliciting, for this court's insistence on the importance of the limitations in the claims seems to have lost its way.

Schreiber's claims 1 and 14 are representative:

> 1. A dispensing top for passing only several kernels of a popped popcorn at a time from an open-ended container filled with popped popcorn, having a generally conical shape and an opening at each end, the opening at the **[**18]** reduced end allows several kernels of popped popcorn to pass through at the same time, and means at the enlarged end of the top to embrace the open end of the container, the taper of the top being uniform and such as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake of a package when the top is mounted on the container.
>
> 14. A package consisting of a container having popped popcorn and having an open end and embracing thereat a dispensing top according to claim 1.

The Board held that it is irrelevant that the Schreiber claims are limited to a container filled with popped popcorn with the additional limitation of dispensing a few kernels at a time before the dispenser jams up. No popcorn container or dispenser was cited by the PTO, and no similar claim limitations were cited by the PTO. These claim limitations can not be ignored. See *Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532, 3 U.S.P.Q.2D (BNA) 1321, 1324 (Fed. Cir. 1987)* (the court can not ignore a plethora of meaningful limitations). Patentability is determined for the invention as claimed, with all its limitations. It is improper to **[**19]** delete explicit limitations from the claim in order to find the residue in the prior art.

"That which infringes if later anticipates if earlier." *Polaroid Corp. v. Eastman Kodak Co., 789 F.2d 1556, 1573, 229 U.S.P.Q. (BNA) 561, 574 (Fed. Cir. 1986)* (citing *Peters v. Active Mfg. Co., 129 U.S. 530, 537, 32 L. Ed. 738, 9 S. Ct. 389 (1889)).* It is inconceivable that this or any court would find Mr. Schreiber's claims to this popcorn dispenser infringed by the oil can of the Harz reference. The claim limitations that the container is filled with popped popcorn and that only a few kernels of popcorn are released at a time could not be ignored in an infringement action, and they are not properly ignored in a patentability action.

The Board, using Mr. Schreiber's invention as a template, rescaled the prior art and filled the oil can with popcorn. This exercise of hindsight is not "anticipation." The law of anticipation requires that the same invention, with all the limitations of the claims, existed in the prior art. See *Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2D (BNA) 1913, 1920-21 (Fed. Cir. 1989)* ("anticipation" requires that the identical invention is described in a single prior art reference). A **[**20]** prior art device can not be altered by the Board and then found to anticipate a different invention in whose image it was recreated.

In responding to the PTO's rejection, Mr. Schreiber made an actual conical top according to the Harz oil can's proportions, and reported that the popcorn did not behave as in his device. The Board then proposed that **[*1481]** Mr. Schreiber had erred in determining the diameter of the opening, and postulated that with the appropriate opening the Harz oil can might behave as does Mr. Schreiber's container. Mr. Schreiber says this is incorrect. I say it is irrelevant. See, e.g., *Richardson, 868*

F.2d at 1236, 9 U.S.P.Q.2D (BNA) at 1920 (every element of the claim must be shown in the reference, including all limitations); *In re Paulsen, 30 F.3d 1475* (the reference must describe the claimed invention sufficiently to place it in the possession of a person of ordinary skill in the field).

Mr. Schreiber's popcorn dispenser is not described in the prior art. Statements in the claims that define and limit the device are material limitations, for purposes of infringement and for purposes of distinguishing from the prior art. See, e.g., *Rowe v. Dror, 112* **[**21]** *F.3d 473, 478-79, 42 U.S.P.Q.2D (BNA) 1550, 1553-54 (Fed. Cir. 1997)* (the field of the invention as stated in a Jepson-type claim limits the invention); *Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677-78, 7 U.S.P.Q.2D (BNA) 1315, 1317 (Fed. Cir. 1988)* (limitations stated in the preamble limit the claimed invention); *In re Stencel, 828 F.2d 751, 754-55, 4 U.S.P.Q.2D (BNA) 1071, 1073 (Fed. Cir. 1987)* (function stated in claim distinguishes from prior art). The rejection for lack of novelty is simply incorrect.

In *Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 137 L. Ed. 2d 146, 117 S. Ct. 1040 (1997)* the Court stressed the importance of claim limitations. The cases cited by the panel majority relate to the discovery of a new use of a known composition or device, and hold that the discovery of that use does not render patentable that which is already known. However, Schreiber's device is not known, but is new, and the claims are explicitly so limited. See *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1255-57, 9 U.S.P.Q.2D (BNA) 1962, 1965-66 (Fed. Cir. 1989)* ("To read the claim in light of the specification indiscriminately to cover all types of optical fibers would be divorced from reality."); **[**22]** *W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540* or *842 F.2d 1275* (anticipation can not be based on conjecture). The claimed popcorn dispenser having a novel structure and function, whereby the container is filled with popcorn and after a few kernels of popcorn are released the dispenser jams up, is not in the cited prior art. The explicit claim limitations must be considered in determination of anticipation, just as they would be considered in construing the claims for the purpose of determining infringement. They can not be ignored.

Since no prior art shows this device, it can not be "anticipated" as lacking novelty.

B

The panel majority suggests that it would be "inherent" to use the oil can as a popcorn dispenser. An inherent disclosure, to be invalidating as an "anticipation," is a disclosure that is necessarily contained in the prior art, and would be so recognized by a person of ordinary skill in that art. *Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268-69, 20 U.S.P.Q.2D (BNA) 1746, 1749-50 (Fed. Cir. 1991).* "Inherency" charges the inventor with knowledge that would be known to the art, although not described. Inherency is not a matter of hindsight **[**23]** based on the applicant's disclosure: the missing claim elements must necessarily be present in the prior art.

The authority cited by the majority, relating to claiming a known composition or device based on discovery of a new use, is inapt. It is of course correct that the discovery of a new use of a known composition or device does not render that composition or device patentable per se. The reason, however, is not "inherency"; it is that the composition or device is already known to the public, and can not be removed from the public. (The new use can of course be claimed as a method of use.) In this case, however, Mr. Schreiber has created a new device, not previously known to the public, and has claimed his new device with explicit limitations that distinguish it from previously known devices.

In passing, I also observe that the majority errs in stating that advantages not recited in the claim can not impart patentability to a new device. The advantages of an invention are often relied on to support patentability; whether they are included in the claim depends on a variety of factors, and is not the subject of a rigid rule.

[*1482] The issue in this case is anticipation; that is, novelty. **[**24]** Since the claimed invention is not described in a single prior art reference, it is not "anticipated."

U.S. Patent and Trademark Office
Board of Patent Appeals and Interferences

Bamberger v. Cheruvu

Interference No. 103,844

Decided February 18, 1998
Released June 12, 2000
(Unpublished)

PATENTS

1. Practice and procedure in Patent and Trademark Office — Interference — Burden of proof (§110.1707)

Although presumption of validity does not apply in proceedings before U.S. Patent and Trademark Office, entity maintaining that patent claim is unpatentable in PTO proceeding bears burden of proving its case; in interference, applicant asserting unpatentability of claim in issued patent bears burden of proving its case by preponderance of evidence, at least in case in which challenger's application was co-pending with application that matured into issued patent.

2. Practice and procedure in Patent and Trademark Office — Board of Patent Appeals and Interferences — Rules and rules practice (§110.1105)

Practice and procedure in Patent and Trademark Office — Interference — Counts (§110.1703)

Patent construction — Claims — In general (§125.1301)

Patent claim involved in interference, if its patentability is under consideration, is given its broadest reasonable construction consistent with specification, rather than construed, if possible, to sustain its patentability, since ability of patentee to file application to reissue patent and have reissue application added to interference in effect allows patentee to amend claims of patent involved in interference; this holding does not affect well-established rules for construing interference counts.

3. Practice and procedure in Patent and Trademark Office — Interference — Pleadings and submissions (§110.1706)

Party asserting anticipation as basis for claim of unpatentability in interference should set forth claim alleged to be unpatentable, together with parenthetical insertions describing exactly where prior art reference describes each limitation of claim; similar procedure should be used for each claim of opponent which party maintains is anticipated.

4. Practice and procedure in Patent and Trademark Office — Interference — Pleadings and submissions (§110.1706)

Party asserting obviousness as basis for claim of unpatentability in interference should set forth claim alleged to be unpatentable, along with parenthetical insertions describing which limitations in claim are described in prior art reference, should explicitly identify any differences, and should explain why subject matter of claim, as a whole, would have been obvious to person having ordinary skill in pertinent art notwithstanding any difference; that explanation should include discussion of level of ordinary skill in pertinent art, and any objective evidence of obviousness and/or non-obviousness, and similar procedure should be used for each claim of opponent which party maintains is unpatentable based on obviousness.

5. Practice and procedure in Patent and Trademark Office — Interference — Rules and rules practice (§110.1704)

Practice and procedure in Patent and Trademark Office — Interference — Burden of proof (§110.1707)

Patentability/Validity — Anticipation — In general (§115.0701)

Junior party in interference asserting that some of senior party's claims are anticipated by prior art must prove its case by preponderance of evidence, by showing that single prior art reference describes each and every element of claimed invention; description in prior art may be explicit, or by way of inherency, and description in prior art of single species in claim is anticipation of claim, just as description in prior art of any value within claimed range is anticipation of that range.

6. Practice and procedure in Patent and Trademark Office — Interference — Rules and rules practice (§110.1704)

Practice and procedure in Patent and Trademark Office — Interference — Pleadings and submissions (§110.1706)

Patentability/Validity — Anticipation — Prior art (§115.0703)

Junior party in interference asserting that prior art reference inherently anticipates claim in senior party's patent need not establish that every limitation of claim is expressly set forth, in haec verba, in prior art reference relied upon, since it is sufficient if prior art is so worded that necessary and only reasonable construction to be given prior art disclosure by one skilled in art is one which will

lend clear support to each positive limitation in claim; although inherency may not be established by probabilities or possibilities, if disclosure is sufficient to show that natural result flowing from operation as taught by prior art would result in claimed subject matter, then description in prior art disclosure is sufficient to establish anticipation through inherency.

7. Practice and procedure in Patent and Trademark Office — Interference — Pleadings and submissions (§110.1706)

Practice and procedure in Patent and Trademark Office — Interference — Evidence (§110.1709)

Junior party in interference asserting that prior art patent inherently anticipates claim of senior party's patent may properly rely on ex-parte experimental work performed after prior art patent issued.

8. Patentability/Validity — Anticipation — Identity of elements (§115.0704)

Junior party in interference has failed to show that claims of senior party's patent for polymer are anticipated by prior art patent, since some of property limitations in claims at issue are not described in prior art reference in haec verba, since only 3 out of 7 experiments purporting to duplicate prior art process produce result which favors finding of inherency, and since junior party therefore has not shown that polymer explicitly described by prior art reference has properties claimed in senior party's patent, or that operating under conditions of prior art reference will necessarily result in polymer having such properties.

9. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (§115.0903.03)

Junior party in interference has failed to show that claims of senior party's patent for polymer, which require zirconium content to be 0.1 to 2 parts per million, are obvious over prior art patent, since prior patent does not describe zirconium content in claimed range, and does not discuss zirconium content, since there is no evidence that anyone of ordinary skill in art would have been motivated to lower zirconium content, in view of testimony that there is no practical difference between polymer having zirconium content of 10 ppm and 0.1-2 ppm, since there are numerous other differences between properties of polymer purportedly made in accordance with prior art patent and as-synthesized compositions of senior party's claims, and since junior party has not explained what those differences are, or why subject matter of senior party's claims, as whole, would have been obvious notwithstanding those differences.

Patent interference between Robert L. Bamberger, Paul M. German, Gerald D. Malpass Jr., and Lawrence W. Locke, junior party, and Subrahanyam Cheruvu, Frederick Y. Lo, and S. Christine Ong, senior party. On junior party's preliminary motion for judgment based on unpatentability of claims 22-35 of senior party's patent. Denied.

[Editor's Note: The Board of Patent Appeals and Interferences states that this opinion was not written for publication in a law journal, and is not binding precedent of the board.]

Eric C. Woglom and William J. McCabe, of Fish & Neave, New York, N.Y.; Myron B. Kurtzman, of Exxon Chemical Co., Baytown, Texas; Charles E. Smith, of Exxon Chemical Co., Houston, Texas; Michael E. Wilson, of Baker & Botts, Houston, for junior party (real party in interest: Exxon Chemical Patents Inc.).

Thomas J. Macpeak, of Sughrue, Mion, Zinn, Macpeak & Seas, Washington, D.C.; Patrick J. Coyne, of Collier, Shannon, Rill & Scott, Washington; Malcolm D. Keen, and Patrick McGlone, of Mobil Oil Corp., Fairfax, Va., for senior party (real party in interest: Mobil Oil Corp.).

Before Stoner, chief administrative patent judge, McKelvey, senior administrative patent judge, and Schafer, administrative patent judge.

McKelvey, J.

A. Introduction

Bamberger Preliminary Motion 9 (Paper No. 83) seeks entry of judgment as to Cheruvu claims 22-35 on the ground that those claims are unpatentable under 35 U.S.C. §§102, alternatively under 35 U.S.C. §103, over U.S. Patent 4,808,561 to Welborn (BX-1010).

B. Abbreviations

BR-	Bamberger record
BX-	Bamberger Exhibit
CX-	Cheruvu Exhibit
LLDPE	linear low density copolymers of ethylene
MFR	melt flow ratio, which is determined by dividing I_{21} by I_2

ppm parts per million

C. Evidentiary burden of proof in an interference when an applicant maintains that a patent claim is unpatentable

1.

In opposition to Bamberger's preliminary motion, Cheruvu makes the following argument (Paper No. 129, page 1, ¶1):

Moreover, in these proceedings, the claims [of the Cheruvu patent] are to be construed narrowly. No authority is cited and Cheruvu fails to provide any cogent rationale in support of its argument.

In reply, Bamberger makes a contrary argument (Paper No. 229, pages 1-2):

Cheruvu is wrong. *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) ("In the patentability context, claims are to be given their broadest reasonable interpretations."). Indeed, Cheruvu's proposition is contrary to the longstanding rule that claims are to be interpreted in the same manner for validity as they are for infringement. Thus, Cheruvu's/Mobil's claims should be interpreted with the same scope for assessing their validity here as Mobil urged when accessing infringement in the Eastern District of Virginia.

Neither argument has been particularly helpful. Without the benefit of well-developed views from either party, we undertake sua sponte to determine the standard applicable to construction of claims of a party's *patent* involved in an interference before the Patent and Trademark Office when an opponent maintains that those claims are *unpatentable*.

The parties have argued at various times throughout this interference that (1) the issues in the Eastern District of Virginia and here are the same (when it has been convenient to make that argument), (2) the issues in the Eastern District of Virginia and here are different (when it has been convenient to make that argument) and; (3) positions taken by a party in the Eastern District of Virginia bind that party forever, in particular in this proceeding. Bamberger argues in this interference that Cheruvu's patent claims are "invalid." But, our enabling statute uses the word "patentability." 35 U.S.C. §135(a). None of these arguments have been particularly helpful.

2.

The Patent Statute provides that, in an interference, the board "may determine questions of patentability." 35 U.S.C. §135(a). "Validity" is a concept exclusively reserved for civil actions. A patentee may file a civil action for infringement of its patent. 35 U.S.C. §281. In the civil action, the patent is presumed valid. 35 U.S.C. §282, first sentence. Nevertheless, a defendant may assert that a patent claim is not valid and the burden of establishing invalidity of a patent claim "shall rest on the party asserting such invalidity." 35 U.S.C. §282, first paragraph, last sentence. The Federal Circuit has judicially determined that the burden must be sustained by clear and convincing evidence. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1358-60, 220 USPQ 763, 769-71 (Fed. Cir. 1984); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 1422, 8 USPQ2d 1323, 1327 (Fed. Cir. 1988). Among other things, invalidity may be based on prior art or a failure to comply with 35 U.S.C. §112. 35 U.S.C. §282, second paragraph. Placing the burden on a party alleging invalidity simply makes common sense, apart from any burden placed on an alleged infringer by 35 U.S.C. §282. How could a patentee prove that its claimed invention is not invalid?

3.

[1] The presumption of validity has not been held to apply in proceedings before the Patent and Trademark Office. Nevertheless, an entity maintaining that a claim is unpatentable in a proceeding in the PTO bears the burden of proving its case. Again, placing the burden on a party alleging unpatentability in a proceeding before the PTO simply makes common sense, apart from any burden placed on an alleged infringer by 35 U.S.C. §282. How could an applicant prove that its claimed invention is not unpatentable?

An examiner's burden of proving unpatentability when rejecting claims in a patent application is by a preponderance of the evidence. *In re Caveney*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985). The same burden is applicable in a reexamination proceeding. *In re Etter*, 756 F.2d 852, 857-58, 225 USPQ 1, 4-5 (Fed. Cir.) (in banc), *cert. denied*, 474 U.S. 828 (1985). Likewise, during examination of an application to reissue a patent, the burden is preponderance of the evidence. *In re Sneed*, 710 F.2d 1544, 1550 n.4, 218 USPQ 385, 389 n.4 (Fed. Cir. 1983). *See also Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427, 7 USPQ2d 1152, 1155-56 (Fed. Cir. 1988).

We cannot think of any reason why that same burden should not apply when unpatentability is asserted of a claim of an *application* or a *patent* involved in an interference.

We can think of a lot of reasons why the burden should be preponderance of the evidence.

There is no reason apparent to us for requiring a party in an interference to prove by clear and convincing evidence that a claim in its opponent's *application* is unpatentable. Reason and common sense dictate that the party should have the same burden of proof as an examiner. Since a patentee and an applicant can claim identical subject matter, why should a higher burden be imposed upon an applicant seeking to have its patentee opponent's claims held unpatentable? If different burdens were placed on applicants and patentees, it would be possible for a patentee to prevail on the same evidence which defeats an applicant. The language "may determine questions of patentability" of 35 U.S.C. §135(a) would be rendered partially useless, if different burdens were placed on proving unpatentability of patent vis-à-vis application claims. Moreover, we note that 35 U.S.C. §282 does not impose a clear and convincing evidence burden—that burden was judicially created for infringement civil actions.

There are significant differences between proceedings in a civil action and proceedings in the PTO. In all proceedings in the PTO, a party has an opportunity to amend, and narrow, the scope of its claims when confronted with prior art. An applicant, a reissue applicant and a patent owner in a reexamination proceeding may file an amendment. 35 U.S.C. §§132 and 305; 37 CFR §§1.111 and 1.550(b). Likewise, a patentee involved in an interference may narrow its claims by filing an application to reissue the patent (35 U.S.C. §251) *and* requesting that the reissue application be added to the interference. 37 CFR §1.633(h). Any narrower patentable claims in the application for reissue may appear in a reissue patent, even if the original patent claims are held to be unpatentable, provided the patentee otherwise prevails on priority. What an applicant involved in an interference can accomplish through a motion to narrow its claims under 37 CFR §1.633(i), a patentee involved in the same interference can accomplish through filing a reissue application *and* taking advantage of 37 CFR §1.633(h). Many patentees involved in interference ultimately end up filing an application to reissue an involved patent and having the application for reissue added to the interference.

4.

We hold that an applicant asserting unpatentability of a patent claim in an interference bears a burden of proving its case by a preponderance of the evidence. Our holding is consistent with other non-binding precedent by other merits panels. *Behr v. Talbott*, 1992 Pat. App. LEXIS 31 (Bd. Pat. App. & Int. July 1, 1992) ("[t]he amount of evidence required to prevail on a motion under 37 CFR §1.633(a) for judgment on the ground of unpatentability is a preponderance of the evidence"); *Schrag v. Strosser*, 21 USPQ2d 1025, 1027 (Bd. Pat. App. & Int. 1991); *Lamont v. Berguer*, 7 USPQ2d 1580, 1582 (Bd. Pat. App. & Int. 1988).

We recognize that when an application is filed after a patent issues, that the applicant must prove priority by clear and convincing evidence. *Price v. Symsek*, 988 F.2d 1187, 26 USPQ2d 1031 (Fed. Cir. 1993). In the interference before us, the Bamberger application was copending with the application which matured into the Cheruvu patent. We leave for another case the determination of whether unpatentability should be based on clear and convincing evidence in those interferences where the junior party application was filed after the senior party patent issued.

D. Construction of claims in an interference with respect to the issue of patentability

1.

During examination of a patent application, claims are given their broadest reasonable construction consistent with the specification. *Burlington Industries v. Quigg*, 822 F.2d 1581, 1583, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). Claims in an application to reissue a patent are given their broadest reasonable construction consistent with the specification. *In re Reuter*, 670 F.2d 1015, 1019, 210 USPQ 249, 253 (CCPA 1981). Likewise, the same rule applies to unexpired patents undergoing reexamination. *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984). The rationale upon which each of these precedents is based is that an applicant or a patentee in proceedings in the PTO has an opportunity to amend its claims.

2.

Where, however, a patentee has no opportunity to amend, claims are construed, if possible, to sustain their patentability. For example, in a reexamination proceeding before the PTO, the claims of an *expired* patent will be construed to sustain their patentability. *Ex parte Papst-Motoren*, 1 USPQ2d 1655 (Bd. Pat. App. & Int. 1986).[1]

[1] A civil action for alleged infringement may be brought up to six years after a patent expires. 35 U.S.C. §286. Hence, the PTO will reexamine

In a civil action for alleged infringement, likewise claims are construed, if possible, to sustain their validity. *Turrill v. Michigan S. & N.I. R.R.*, 68 U.S. (1 Wall.) 491, 510 (1863) ("Patents for inventions are not to be treated as mere monopolies, and, therefore, odious in the eyes of the law; but they are to receive a liberal construction, and under the fair application of the rule, *ut res magis valeat guam pereat*, are, if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor."). *See also Klein v. Russell*, 86 U.S. (19 Wall.) 433, 466 (1873), and *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 932 (Fed. Cir. 1984) (in district court litigation, claims are to be construed, if possible, to sustain their validity). A rationale supporting each of these precedents, is that a patentee cannot amend its claims in a civil action before a district court.

3.

[2] For reasons given earlier in this opinion, the ability of a patentee to file an application to reissue a patent and have the reissue application added to the interference, in effect, allows a patentee to amend claims of a patent involved in an interference. A broader claim can only be presented within two years of the date a patent issues. 35 U.S.C. §251, fourth paragraph. But, a narrower claim can be presented at any time.

We hold that, when the patentability of a patent claim involved in an interference is under consideration, the patent claim shall be given its broadest reasonable construction consistent with the specification.

4.

Nothing in our opinion should be construed as affecting the well-established rules for construing a count. A count is not a claim. Rather, a count is solely a vehicle for determining the admissible evidence on the issue of priority. *Case v. CPC International, Inc.*, 730 F.2d 745, 749, 221 USPQ 196, 199 (Fed. Cir.), *cert. denied*, 469 U.S. 872 (1984); *Squires v. Corbett*, 560 F.2d 424, 433, 194 USPQ 513, 518-19 (CCPA 1977). However, it is a fact that a determination of the scope of a count, particularly today where counts are often written in an alternative format (i.e., "the composition of claim 1 of A or the composition of claim 12 of B"), will often involve construction of the scope of a claim which forms part of the count.

There are well-established rules for construing the scope of a count. Notwithstanding the use of alternative language in counts, in the absence of ambiguity, the language of a count still should be given the broadest reasonable interpretation it will support. It should not be given a contrived, artificial or narrow interpretation which fails to apply the language of the count in its most obvious sense. Only when counts are ambiguous may resort be had to the application or patent where the count originated. *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 500, 42 USPQ2d 1608, 1612 (Fed. Cir. 1997). *See also Mead v. KcKirnan*, 585 F.2d 504, 507, 199 USPQ 513, 515 (CCPA 1978) ("[a]bsent ambiguity, interference counts are to be given their broadest reasonable interpretation").

5.

Cheruvu argues that Bamberger relies on "extrinsic evidence that is not pertinent to claim construction under Markman" (Paper No. 129, page 1). There is no citation to "Markman." Cheruvu does not explain what "extrinsic evidence" relied upon by Bamberger is "not pertinent." Nor did Cheruvu take advantage of the evidence excluding provisions of 37 CFR §1.656(h).

By "Markman," we assume that Cheruvu is referring to *Markman v. Westview Instruments Inc.*, 52 F.3d 967, 34 USPQ2d 1321 (Fed. Cir. 1995) (in banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384 [38 USPQ2d 1461] (1996).

A significant portion of Section IV, Part A, of the Federal Circuit's in banc *Markman* opinion contains a discussion of certain principles which can be used to assist in the construction of the scope of claims. 52 F.3d at 979-81, 34 USPQ2d at 1329-1333. The principles include:

(1) The construction of a claim is an issue of law.

(2) The claims, specification and prosecution history (i.e., the "intrinsic evidence") may be considered to ascertain the meaning of claims.

(3) Expert testimony, including evidence of how those skilled in the art would interpret the claims, may also be used.

(4) Claims must be read in view of the specification, of which they are a part.

(5) The description in the specification may act as a sort of dictionary, which explains the invention and may define terms used in the claims.

(6) A patentee is free to be its own lexicographer. The caveat is that any special defini-

a patent for at least six years after it expires. There is no opportunity to amend claims after a patent expires.

tion given to a word must be clearly defined in the specification.

(7) The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.

(8) To construe claim language, it is also appropriate to consider the patent's prosecution history, if it is in evidence. We will note, at this point, that in an interference, the specification, claims and drawings of involved applications and patents are part of the record. However, the file wrapper of involved and benefit applications and patents (i.e., prosecution history) must be placed in evidence. 37 CFR §1.671(a).

(9) The "undisputed public record" of proceedings in the Patent and Trademark Office is of primary significance in understanding the claims. Therefore, a court has broad power to look as a matter of law to the prosecution history of the patent in order to ascertain the true meaning of language used in the patent claims:

> The construction of the patent is confirmed by the avowed understanding of the patentee, expressed by him, or on his half [sic-behalf], when his application for the original patent was pending. . . . When a patent bears on its face a particular construction, inasmuch as the specification and claim are in the words of the patentee, . . . such a construction may be confirmed by what the patentee said when he was making his application.

Goodyear Dental Vulcanite Co. v. Davis, 102 U.S. 222, 227 (1880).

(10) Although the prosecution history can and should be used to understand the language used in the claims, it cannot "enlarge, diminish, or vary" the limitations in the claims.

(11) Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.

(a) Extrinsic evidence may be helpful to explain scientific principles, the meaning of technical terms, and terms of art that appear in the patent and prosecution history.

(b) Extrinsic evidence may demonstrate the state of the prior art at the time of the invention. It is useful "to show what was then old, to distinguish what was new, and to aid the court in the construction of the patent.

(12) When the intrinsic evidence is ambiguous, *Bell & Howell Document Mgt v. Altek Systems,* —— F.3d ——, ——, 45 USPQ2d 1033, 1037-38 (Fed. Cir. 1997), a court may, in its discretion, receive extrinsic evidence in order "to aid the court in coming to a correct conclusion" as to the "true meaning of the language employed" in the patent.

(13) Extrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims.

(14) After considering the extrinsic evidence, the court finally arrives at an understanding of the language as used in the patent and prosecution history. The court must then pronounce as a matter of law the meaning of that language.

(15) Through this process of construing claims by, among other things, using certain extrinsic evidence that the court finds helpful and rejecting other evidence as unhelpful, and resolving disputes in route to pronouncing the meaning of claim language as a matter of law based on the patent documents themselves, the court is not crediting certain evidence over other evidence or making factual evidentiary findings. Rather, the court is looking to the extrinsic evidence to assist in its construction of the written document, a task it is required to perform.

E. Evidentiary burden and claim construction applied to patentability determinations made in this interference

In deciding Bamberger Preliminary Motion 4, as well as other patentability motions in this interference, we have applied the principles set out in Parts B and C. To the extent applicable, we have also applied the "Markman" principles set out in Part D, Section 5.

F. Preliminary motions for judgment under 37 CFR §1.633(a) based on the prior art

The rules authorize a party to raise the unpatentability of an opponent's claim based on the prior art. Unpatentability is raised by filing a preliminary motion under 37 CFR §1.633(a).

A party who files a motion, including a preliminary motion under Rule 633(a), must comply, inter alia, with 37 CFR §1.637(a), which provides in part:

> A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion. Each motion shall include a statement of the precise relief requested, a statement of the material facts in support of the motion, in numbered paragraphs, and a full statement of the reasons why the relief requested should be granted.

We take this opportunity to comment on the preferred manner of setting out "a full statement of the reasons why" a claim should be held unpatentable over the prior art.

[3] When anticipation (i.e., 35 U.S.C. §102) is the basis for unpatentability, the

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guage employed" in the patent.
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claim alleged to be unpatentable should be set out along with parenthetical insertions describing exactly where a prior art reference describes each limitation of the claim. A similar procedure should be used for each claim of an opponent which a party maintains is anticipated. In this respect, we appreciate the effort made by Bamberger in Attachment A of its Supplement to Bamberger Preliminary Motion 4 (Paper No. 91).

[4] When obviousness (i.e., 35 U.S.C. §103) is the basis for unpatentability, the claim alleged to be unpatentable should be set out along with parenthetical insertions describing which limitations in the claim are described in a prior art reference. Any difference should then be explicitly identified. Finally, an explanation should be made as to why the subject matter of the claim, as a whole, would have been obvious to a person having ordinary skill in the art notwithstanding any difference. Furthermore, the explanation should include a discussion (1) into the level of ordinary skill in the art and (2) any evidence of so-called "secondary factors" (which we prefer to call objective evidence of obviousness and/or non-obviousness). A similar procedure should be used for each claim of an opponent which a party maintains is unpatentable based on obviousness.

G. Findings of fact

Background

1. According to Bamberger, Cheruvu claims 22-35 (reproduced in Appendix 409-1) are unpatentable under 35 U.S.C. §102, alternatively under 35 U.S.C. §103, over U.S. Patent 4,808,651 to Welborn (BX-1010).

2. The application which matured into the Cheruvu patent was filed on March 25, 1993 (BX-1007, page 1).

3. The Welborn patent was issued on February 28, 1989 (BX-1010, page 1).

4. Welborn is prior art vis-à-vis Cheruvu under 35 U.S.C. §102(b).[2]

Cheruvu process claim 34 and product-by-process claim 35

5. Bamberger argues that Cheruvu claim 35 is anticipated.

6. Cheruvu claim 35 reads:

The product produced by the process of claim 34.[3]

7. Cheruvu claim 35 thus depends from Cheruvu claim 34, which reads (indentation and paragraph numbering ours):

A gas phase process for producing an as-synthesized composition which

(1) is dry and

(2) solvent-free and comprises spherical, non-porous particles, which has [sic—have]

(a) an average particle size of 0.015 to 0.035 inches, and

(b) a settled bulk density of from 25 to 36 lb/ft^3 and which is a copolymer of ethylene and an alpha olefin, which

(i) has a density of 0.902 to 0.929,

(ii) a MFR of 15 to about 20, and

(iii) a M_w/M_n of from about 2.5 to about 3.0, comprising contacting ethylene and said alpha olefin with a catalyst

(I) at a temperature of about 60° C. to about 95° C.

(II) at a pressure of from about 100 to about 350 psi, wherein the catalyst comprises silica

(A) having reactive hydroxyl groups and impregnated with a zirconocene compound and an aluminoxane, and

(B) which has an Al to Zr ratio of from 50 to 500.

Scope and content of the Welborn patent

8. In the language of Cheruvu claim 34, Welborn explicitly describes (column and line insertions are to Welborn):

A gas phase (e.g., col. 8, lines 35-36 and 60 et seq.; col. 12, line 23) process for producing an as-synthesized composition (e.g., col. 12, lines 42-46) which

(1) is dry and

(2) solvent-free and

comprises spherical, non-porous particles, which has [sic—have]

(a) an average particle size of 0.015 to 0.035 inches, and

[2] To the extent this finding is a conclusion of law, it may be treated as a conclusion of law.

[3] A product by process claim defines a product. The product may be anticipated by any prior art reference which describes a "product" which is identical to a "product by process" even if "product" is made by a method which differs from the process used to make the "product by process." *See In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). The rationale is that a product is old if it has been made by any method. A new method of making an old product may, however, be patentable.

(b) a settled bulk density of from 25 to 36 lb/ft^3 and

which is a copolymer of ethylene and an alpha olefin (col. 1, lines 9-11 — 1-butene and 1-hexene; col. 2, lines 36-37 and 53-54; col. 12, line 59 — 1-butene), which

(i) has a density of 0.902 to 0.929 [gm/cc (col. 12, line 62 — density of 0.918),

(ii) a MFR of 15 to about 20, and

(iii) a M_w/M_n of from about 2.5 to about 3.0 (col. 13, lines 51-52 — M_w/M_n, = 2.5 [4]),

comprising contacting ethylene and said alpha olefin with a catalyst

(I) at a temperature of about 60° C. to about 95° C (col. 10, lines 41-44 — -60 to 280° C; Col. 12, line 39 — 85°C).

(II) at a pressure of from about 100 to about 350 psi (col. 10, lines 45-48 — 1 to 500 atm; col. 12, line 39 — 200 psi),

wherein the catalyst comprises silica (col. 11, line 23 — Davison 952 silica)

(A) having reactive hydroxyl groups and impregnated with a zirconocene compound (col. 11, lines 66-67 — bis (*n*-butyl-cyclo-pentadienyl) zirconium dichloride) and an aluminoxane (col. 11, line 27 — methyl alumoxane), and

(B) which has an Al to Zr ratio of from 50 to 500 (col. 5, lines 51-52 — Al:metal of from 1:1 to 100:1; col. 5, line 64 — metal may be zirconium).

9. Bamberger maintains that one having ordinary skill in the art would understand from other evidence in the record that the property limitations not explicitly described by Welborn are inherent. Bamberger relies in part on certain experiments performed by Dr. Frederick Y. Lo (a Mobil employee and a named inventor in the Cheruvu patent) to establish that certain properties in Cheruvu claim 34 are inherently described by Welborn.

[4] In Welborn's Example 9, the weight average molecular weight is described as 190,00 (which is a typo which should read 190,000) and the number average molecular weight is reported as 76,000. M_w/M_n = 190000 / 76000 = 2.5. But, Welborn's polymer (which may be a homopolymer (BX-1096, page 4, ¶13)) having an M_w/M_n of 2.5 has a density of 0.958 gm/cc (which is outside the density range of 0.902 to 0.929 gm/cc required in Cheruvu claim 34).

The Lo experiments

10. There came a time during prosecution of the application which matured into the Cheruvu patent that the examiner entered a rejection of the then pending Cheruvu claims as being unpatentable under 35 U.S.C. §102(b), alternatively under 35 U.S.C. §103, over the Welborn patent (BX-1007, pages 046-048).

11. In response to the rejection, Cheruvu filed a declaration by Dr. Lo describing certain experiments which were said to have been conducted for the purpose of making a comparison of he copolymers made in accordance with the Welborn method vis-à-vis copolymers made by the method claimed by Cheruvu (CX-1).

12. Bamberger Exhibit 1011 comprises copies of Mobil laboratory notebook and analysis describing, among other things, the Lo experiments mentioned above.

13. Bamberger relies on four Lo experiments to make out a case of inherency. Those Lo experiments are identified in the record as:

a. Run 4086-108 (BX-1011, pp. MOC-099974-76)

b. Run 4086-109 (BX-1011, pp. MOC-099977-79)

c. Run 4086-111 (BX-1011, pp. MOC-099983-85)

d. Run 4086-118 (BX-1011, pp. MOC-099993-95).

14. Cheruvu maintains that the four Lo experiments "are not representative of the Welborn '561 catalysts" (CX-1, page 26, ¶64).

15. Cheruvu maintains, however, that other Lo experiments "are representative (CX-1, page 16, Table 1). Those Lo experiments are identified in the record as:

a. Run 4086-107 (BX-1011, pp. MOC-099971-73).

b. Run 4086-121 (BX-1011, pp. MOC-100000-02).

c. Run 4086-122 (BX-1011, pp. MOC-100003-04).

d. Run 4086-123 (BX-1011, pp. MOC-100005-06).

16. From tables in both Bamberger Preliminary Motion 4 and Cheruvu Exhibit 1, Bamberger Exhibits 1011, 1141 and 1142, attachment A to the Supplement to Bamberger

Preliminary Motion 4 and information contained in a declaration filed during ex parte prosecution by Cheruvu before the examiner (BX-1007, pages 061-070), polymers made in the eight Lo experimental "Welborn runs" identified above have properties shown in the Table 1 (*see* unnumbered page 23).

17. For the purpose of deciding Bamberger Preliminary Motion 4, the following facts have been assumed, albeit not necessarily found to exist):

a. One skilled in the art would understand the Cheruvu claim limitation of "a M_w/M_n of from about [5] 2.5 to about 3.0" to mean "a M_w/M_n of from 2.3 to 3.3" (BX-1138, page 140:8-12).

b. One skilled in the art would understand the Cheruvu claim limitation "MFR of 15 to about [6] 20" to mean "MFR of 15 to 21" (BX-1008, page 47:22 through 48:20).

c. The products produced in the Lo experiments and gas-phase as-synthesized polymers described by Welborn are "dry" (BX-1074, page 292:17 through 293:10).

d. The gas-phase polymerization described by Welborn does not include the use of a solvent. Hence, the gas-phase as-synthesized polymers described by Welborn are "solvent-free."

Table 1

Run 4086	catalyst	type of polymerization	density gm/cc	MFR	Average particle size in	Average particle size μm	Zr Content ppm	M_w/M_n
107	Welborn A-105	slurry	*0.934*	*34.9*			64.8	*5.1*
108	Welborn D-106	slurry	0.919	18.46			9.4	2.8
109	Welborn D-106	slurry	0.928	*22.16*	0.018	452.29	7.9	3.0
111	Welborn D-106	slurry	0.926	18.81	0.016	397.78	4.1	2.9
118	Welborn D-115	slurry	0.927	20.43	0.014	350.76	5.4	3.1
121	Welborn D-115	slurry	0.929	*24.09*			11.3	*2.1*
122	Welborn D-115	gas	0.949	n/r [7]				
123	Welborn D-115	gas						
110	Mobil 4086-064	slurry	0.918	18.16	0.017	423.05	1.0	n/r [8]

The "A-105" and "D-106" and "D-115" in the catalyst column refer to the number used by Mobil to identify the particular Welborn catalyst in the Lo laboratory notebooks (*see, e.g.*, BX-1011, page MOC-099973, near the top of the page under "Cat:" which then identifies in handwriting "4086-105"). Welborn A and Welborn D mean Examples A and D of Welborn.

The *Table 1* figures in bold [italics] are not within the range for that property as set out in Cheruvu claim 34 (it being noted that Cheruvu claim 34 does not contain a limitation to Zr content.

The Speed testimony—Part 1

18. Dr. Charles S. Speed provided testimony on behalf of Bamberger (BX-1096)

19. Dr. Speed rendered a first opinion that the silica of the Welborn catalyst has reactive hydroxyl groups (BX-1096, page 2, ¶8; BX-1143 [book authored by Dr. R. K. Iler], page 639; BX-1034, page 1).

20. Dr. Speed's first opinion is found to be credible and is supported by objective data in Iler (BX-1143).[9] Accordingly, the silica of the Welborn catalyst has reactive hydroxyl groups.

21. Dr. Speed rendered a second opinion along the following lines (BX-1096, page 4, ¶15) (emphasis ours):

> [a]s of March 25, 1992, it was known that the catalysts and processes described in * * * Welborn * * * would result in ethylene alpha-olefin copolymers having a particle size and a bulk density within the ranges claimed in the Cheruvu patent, i.e., "an average particle size of 0.015 to 0.035 inches, and a settled bulk density of from 25 to 36 lb/ft^3." Such a bulk density and

[5] The assumption makes it unnecessary for us to determine whether the "intrinsic evidence" with respect to the word "about" is ambiguous. Cheruvu is prevailing on Bamberger Preliminary Motion 6 and therefore the assumption does not harm Cheruvu.

[6] The assumption makes it unnecessary for us to determine whether the "intrinsic evidence" with respect to the word 'about' is ambiguous. *See* n.5, *supra.*

[7] A blank space or "n/r" means not reported. According to Dr. Lo, the MFR could not be meaningfully determined (BX-1007, page 063) due to high molecular weights and for other reasons.

[8] Mobil GPC (gel permeation chromatography) analysis for Run 4086-110 was not included by Bamberger in Bamberger Exhibit 1141.

[9] Bamberger also relies on Hockey, The Surface Properties of Silica Powders, Chemistry and Industry, pages 57-63 (1965). Bamberger, however, does not point to any page, column and line. We decline to conduct a search in the first instance through Hockey to determine whether Bamberger's reliance on Hockey is justified.

average particle size are typical for copolymer particles made in a commercial *gas-phase reactor.*

22. Dr. Speed's second opinion is not entitled to much, if any, weight with respect to settled bulk density. Dr. Speed does not refer to any documentary prior art in rendering his second opinion. Dr. Speed points to no evidence that the reaction conditions in the Welborn gas-phase reactor are those in "a commercial gas-phase reactor" mentioned in his testimony. Dr. Speed's use of the language "typical" also leaves some doubt as to whether, in the case of the Lo experiments attempting to duplicate the Welborn process, the settled bulk density recited in Cheruvu claim 34 was obtained.

23. Dr. Speed rendered a third opinion along the following lines (BX-1096, page 6, ¶19):

> In a gas-phase polymerization in which a supported catalyst is used, polymer morphology [10] is dependent on the morphology of the catalyst support. The use of a generally spherical or round-shaped silica particle as a catalyst support in a gas-phase copolymerization of ethylene with an alpha-olefin typically results in generally spherical-shaped polymer particles. I am familiar with Davison 948 [11] and Davison 952 [12] silicas. Both of those silicas are high-surface area silicas that are generally spherical or round-shaped in appearance. Use of either of these materials as a catalyst support in a commercial gas-phase polymerization results in generally spherical or round-shaped polymer particles.

24. Dr. Speed's third opinion is found to be credible and is supported by objective evidence. The Cheruvu and Welborn patents both describe the use of the same silica support. The same silica support was used in the Lo experiments leading to the declaration filed in the PTO.

25. Welborn as-synthesized polymers made by using a catalyst comprising a silica carrier based on Davison 952 would be spherical.

26. Dr. Speed does not provide any convincing testimony that the Welborn as-synthesized polymers are "non-porous."

Cheruvu product claim 22

27. Cheruvu claim 22 reads (indentation and paragraph numbering ours):

An as-synthesized composition which is

(1) dry and

(2) solvent-free and

comprises spherical, non-porous particles, which has [sic—have]

(a) an average particle size of 0.015 to 0.035 inches, and

(b) a settled bulk density of from 25 to 36 lb/ft^3, and

which is a copolymer of ethylene and an alpha olefin of 3 to 10 carbon atoms,

(i) having a density of 0.900 to 0.929,

(ii) MFR of 15 to about 20, and

(iii) containing 0.1 to 2 ppm Zr.

28. Cheruvu dependent claim 33 reads:

The composition of claim 22, wherein the copolymer is characterized by M_w/M_n which ranges from 2.5 to 3.0.

29. Cheruvu product claim 22 differs from Cheruvu product-by-process claim 35 essentially

a. in requiring that the zirconium content of the product be 0.1 to 2 ppm and

b. it does not contain a limitation with respect to M_w/M_n.

30. Cheruvu claim 33 contains a M_w/M_n limitation.

The Speed testimony—Part 2

31. Dr. Speed rendered a fourth opinion along the following lines (BX-1096, page 5, ¶17):

> From the standpoint of physical properties, there is no difference between an ethylene alpha—olefin copolymer "containing 0.1 to 2 ppm Zr" and an ethylene

[10] "Polymer morphology" means the structure, arrangement, an physical form of polymer molecules. Stevens, *Polymer Chemistry*, page 70 (2d ed. 1990). Polymer morphology would include, among other things, voids in polymer granules, i.e., porosity of those granules (*see, e.g.*, BR-4188:21-24).

[11] Davison 948 silica is described as having been used by Dr. Howard C. Welborn, Jr., in certain experiments discussed, *infra. See, e.g.*, CX-3, page 44 under "Supported catalyst preparation."

[12] Both Cheruvu (col. 3, lines 41-42) and Welborn (col. 11, line 23) describe the use of Davison 952 silica as a suitable silica carrier to make the catalyst used to produce their respective polymers. The same silica was used in the Mobil experiments (BX-1007, pages 056-057) discussed in Table I.

alpha—olefin copolymer containing up to 10 ppm Zr.

32. Dr. Speed's fourth opinion is not consistent with the results of the Lo experiments (upon which Bamberger has bottomed its preliminary motion). In the Lo experiments, Run 4086-109 resulted in a polymer with a zirconium content of 7.9 (which is *within* "up to 10") and an MFR of 22.16 (which is *not within* the MFR required by Cheruvu claim 22), whereas Run 4086-110 resulted in a polymer with a zirconium content of 1.0 (which is *within* "0.1 to 2") and an MFR of 18.16 (which is *within* the MFR required by Cheruvu claim 22).

33. Dr. Speed's fourth opinion will not be given much, if any, weight.

34. Dr. Speed rendered a fifth opinion along the following lines (BX-1096, page 5, ¶18):

> As of March 25, 1992 [the critical date as to Cheruvu], it was known that the amount of zirconium in a copolymer could be reduced by one or more of a number of known techniques. For example, it was known that if the partial pressure of the ethylene was increased during the polymerization, catalyst productivity would increase * * *. It also was known that if the reaction was allowed to continue for a longer period of time, the amount of copolymer produced per pound of catalyst would increase * * *. Furthermore, it was known that when a small—scale polymerization like those described in Welborn examples is scaled—up to commercial scale, the amount of impurities in the system can be controlled at a lower level * * *. Finally, it as known that the catalyst activity in terms of grams of polymer produced per gram of zirconium could be increased by increasing the Al:Zr ratio of the catalyst. Again, this increase in catalyst activity would lead to a decrease in the amount [of] residual zirconium in the copolymer. It was known that one or more of these techniques could be used to increase catalyst productivity, thereby reducing the amount of residual zirconium from about 10 ppm to "0.1 to 2 ppm" in the "as—synthesized composition."

35. No documentary evidence has been called to our attention to support of Dr. Speed's fifth opinion. There is objective evidence in the record which may be partially contrary to Dr. Speed's fifth opinion.[13] More important, Dr. Speed does not say why one having ordinary skill in the art would want to have reduced, or would have been motivated to reduce, zirconium content to a level of "0.1 to 2 ppm." We decline to give Dr. Speed's fifth opinion much weight, particularly given that he also believes that there is no difference between the properties of polymers containing 10 ppm zirconium and the properties of polymers containing "0.1 to 2 ppm" zirconium.

Dr. Lo's Table 2

36. In his testimony, Dr. Lo sets out the zirconium content of the polymers produced in Examples 1-3, 3A and 4-10 of Welborn. The zirconium content ranges from a low of 61 ppm for Example 7 to a high of 846 ppm for Example 5 (CX-1, page 21, Table 2).

37. Bamberger does not challenge the correctness of Dr. Lo's zirconium contents as set out in Dr. Lo's Table 2.

The Welborn declaration

38. The file wrapper of the Welborn patent is in evidence (CX-3).

39. Included in the Welborn file wrapper is a declaration (CX-3, pages 43-47) of Dr. Howard Curtis Welborn, Jr., deceased (BX-1074, page 338:12-14).[14]

40. Dr. Lo, reviewing two runs reported in Table 1 of the Welborn declaration

a. 14126-134 supported catalyst and

b. 14126-147 supported catalyst.

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[13] We have found on our own that increasing the Al:Zr ratio from (54:1) in Welborn run 14126-134 to (100:1) in Welborn run 14126-147, (1) appears to have increased the yield from 97.0 grams to 122.1 grams, but (2) contrary to the opinion expressed by Dr. Speed, increased (not decreased) the Zr content from 1.17 ppm to 1.68 ppm. *See* Dr. Welborn's runs as discussed *infra* at Findings 39-42.

[14] The Welborn file wrapper was introduced in evidence during an evidentiary hearing which took place on July 28, 1997, in connection with Bamberger Preliminary Motion 1. The file wrapper was offered in evidence by Cheruvu. Initially a question was raised by a member of this merits panel (the only member present at the evidentiary hearing) as to the admissibility of the declaration, given it could not be cross-examined. Ultimately the declaration was admitted because Cheruvu placed it in evidence and Bamberger did not object (BX-1074, pages 339:16 through 341:11). Bamberger's use of the declaration was on re-direct after Cheruvu "opened the door." In any event, the declaration is clearly admissible for the limited purpose of showing what is described in the Welborn patent file. We have considered the declaration only for what is described therein.

41. Dr. Lo, agreed that the polymers described in these two Welborn runs contain zirconium contents of 1.17 ppm (BX-1074, pages 341:18 through 342:13) and 1.68 (BX-1074, pages 343:17-19).

42. Some of the properties of the two Welborn runs discussed above are shown in *Table 2.*

Table 2

Welborn Run No.	Zr Content ppm	Al/Zr ratio	Yield grams	Morphology	M_w/M_n
14126-134	1.17	54	97.0	Free flowing polymer granules	1.94 [15]
14126-147	1.68	100	122.1	Free flowing polymer granules	2.34 [16]

43. There is no discussion in Welborn or the Welborn declaration of zirconium content or of the significance of zirconium content.

Difference between Cheruvu claims 22-33 and Welborn

44. Cheruvu claim 22 differs from Welborn at least in that Welborn does not describe polymers having a zirconium content of from 0.1 to 2.0 ppm.

H. Discussion

1. *Burden of proof*

[5] Bamberger maintains that some of Cheruvu's claims are unpatentable over the prior art. Bamberger is under a burden to prove its case (37 CFR §1.637(a)) by a preponderance of the evidence.

To establish anticipation, Bamberger must show that a prior art reference describes each and every element of a claimed invention. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

The description in the prior art may be explicit or by way of inherency. *Glaxo, Inc. v. Novopharm, Ltd.*, 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995) (for anticipation, the description need not be express, but may anticipate by inherency where it would be appreciated by one of ordinary skill in the art); *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.), *cert. dismissed*, 468 U.S. 1228 (1984) (anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention).

A description in the prior art of a single species within the claim is an anticipation of the claims. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985).

A description in prior art of any value within a claimed range is an anticipation of the range. *In re Wertheim*, 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976).

To establish unpatentability under 35 U.S.C. §103, Bamberger must satisfy the requisites set out in *Graham v. John Deere Co.*, 383 U.S. 1 [148 USPQ 459] (1966).[17]

[6] To establish that a prior art reference inherently anticipates a claim, Bamberger need not establish that every limitation is expressly set forth *in haec verba* in the prior art reference relied upon; it is sufficient if the prior art is so worded that the *necessary and only reasonable* construction to be given the disclosure of the prior art by one skilled in the art is one which will lend clear support to each positive limitation in the claim. *Compare Binstead v. Littmann*, 242 F.2d 766,

[15] This M_w/M_n is not within the scope of Cheruvu product claims 33 and 35. *See* Finding 17(a). Cheruvu claim 22 does not have as M_w/M_n limitation.

[16] This M_w/M_n is within the scope of Cheruvu product claims 33 and 35.

[17] We disagree with Bamberger's suggestion that "[a] claimed invention is obvious [sic—unpatentable] * * * if the differences between that invention and the prior art would have been obvious to a person of ordinary skill in the art" (Paper No. 83, page 11). Rather, claimed subject matter is unpatentable under 35 U.S.C. §103 only if the subject matter, *as a whole*, would have been obvious notwithstanding any differences between the subject matter and a prior art reference.

770, 113 USPQ 279, 282 (CCPA 1957). Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances described in a prior art reference is not sufficient. If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught by the prior art would result in the claimed subject matter, the description in the prior art disclosure would be sufficient to establish anticipation through inherency. *Compare Hansgirg v. Kemmer,* 102 F.2d 212, 214, 40 USPQ 665, 667 (CCPA 1939).

[7] Bamberger may properly rely on ex parte experimental work performed after the Welborn patent issued to establish inherency. *Spero v. Ringold,* 377 F.2d 652, 658, 153 USPQ 726, 730 (CCPA 1967). *See also Standard Oil Co. (Indiana) v. Montedison S.p.A.*, 664 F.2d 356, 364, 376,[18] 212 USPQ 327, 334, 345 (3d Cir. 1981), *cert. denied,* 456 U.S. 915 (1982).

2. *Anticipation*

[8] In our opinion, Bamberger has not met its burden of establishing anticipation. Bamberger necessarily has to concede that some of the property limitations of Cheruvu claims 22 and 34 are not described *in haec verba* in Welborn, because Welborn does not describe in so many words all of the properties recited in the Cheruvu claims or their numerical values.

To overcome the absence of an *in haec verba* in Welborn, Bamberger turns to four Lo experiments. Cheruvu maintains that the four Lo experiments are not representative of the Welborn process, and calls attention to other Lo experiments which it maintains are representative. Insofar as we can tell, Bamberger does not challenge Cheruvu's argument that the other Lo experiments are representative. Hence, we agree with Cheruvu that if the Lo experiments are to be considered, all of Lo experiments should be considered as a whole. When all of the Lo experiments are considered, it is our view that Bamberger cannot sustain its burden of demonstrating "inherency."

Initially, we question whether it would be appropriate to take bits and pieces from one part of Welborn and combine them with other bits and pieces from another part of Welborn to "come up" with a "phantom polymer" not explicitly described by Welborn and then measure the properties of the phantom polymer to establish inherency. Rather, we believe Bamberger was under a burden to show that (1) a polymer explicitly described by Welborn has the Cheruvu properties or (2) operating under the Welborn process conditions will necessarily result in a polymer having the Cheruvu properties.

We start our analysis with an assumption (which we will later undermine) favorable to Bamberger, *viz.*, the Lo experiment (*see Table 1*, supra) Runs 4086-108, -111 and -118 produced polymers having the properties recited in Cheruvu process claim 34, and therefore also Cheruvu product-by-process claim 35. However, it is a fact that Lo experimental Runs 4086-107, -109 and -121 (MFR too high) and -122 (density too high) produce polymers which *do not* have all of the properties recited in the same Cheruvu claims.

The question of whether a prior art reference inherently describes a limitation in a claim is a question of fact. *In re Schreiber,* 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997. We cannot find that Welborn inherently describes a process for making a polymer or a polymer within the scope of Cheruvu claims 34 and 35. We have properties "results" for polymers made in seven Lo experimental runs. The "results" reveal a "score" of 4 do not have the properties to 3 have the properties. From Bamberger's point of view, we are not particularly impressed with the "score." Six of the Lo experimental runs were performed in a slurry polymerization. Cheruvu claim 34 calls for a gas phase polymerization. The only Lo experimental run performed in the gas-phase, and supposedly duplicating Welborn, resulted in a density (0.949) which is higher than the density limitation in Cheruvu claims 34 and 35. Perhaps more important, however, is the reliability of the evidence. Can it be said that (1) the *necessary and only reasonable* construction to be given the description of the process in Welborn by one skilled in the art is one which will lend clear support to each positive limitation in the Cheruvu claims 34 and 35 and/or (2) the natural result flowing from the operation as taught by Welborn would (not may) result in the subject matter of Cheruvu claims 34 and

[18] In *Standard Oil,* an objection to the admissibility of ex parte experiments was overruled where the party not present during the experiments had an opportunity cross-examine the individuals conducting the experiments. Here, Bamberger was not present during the ex parte experiments, but was able to cross-examine. Moreover, and perhaps more significant, it is Bamberger who attempts to rely in the first instance on the Lo experiments.

35? We think not. Too much is left to chance, speculation and hope when only 3 experiments out of 7 experiments purporting to duplicate the Welborn process produce a result which favors inherency.

Earlier, we made assumptions, which we now address. Insofar as we can tell, Bamberger has not addressed the limitation in the Cheruvu claims which requires the as-synthesized composition to be "non-porous." In discussing the 'spherical, non-porous particles" limitation on page 6 of attachment A to the Supplement to Bamberger Preliminary Motion 4, we find no discussion of porosity. Nor, have we found any discussion of the 'non-porous' limitation in the Speed testimony.[19] Likewise, Bamberger has failed to satisfy us that the Cheruvu settled bulk densities were achieved in the Lo experiments. What might be typical for a commercial gas-phase reactor has not been shown by Bamberger, generally or through the testimony of Dr. Speed, to be typical for a laboratory scale slurry reactor.

There is a dispute between Bamberger[20] and Cheruvu[21] as to whether the Welborn and Cheruvu catalysts are the same. Cheruvu says that its catalyst has more reactive hydroxyl groups than the Welborn catalyst. Bamberger responds by saying that there is no numerical limitation of reactive hydroxyl groups in the Cheruvu claims. We find it unnecessary to resolve the Bamberger-Cheruvu dispute. However, the fact that there are no numerical limitations for reactive hydroxyl groups in the Cheruvu claims does not mean that Bamberger can avoid proving that other numerical range polymer property limitations are obtained when the Welborn process is duplicated. The extent of the reactive hydroxyl groups on the respective Welborn and Cheruvu catalysts may be the reason the Lo experimental results are not consistent.

Bamberger has failed to establish, by a preponderance of the evidence, that Welborn anticipates any of Cheruvu claims 22-35.

3. *Obviousness*

Cheruvu claim 22 (from which Cheruvu claims 23-33 depend in one form or another) requires the zirconium content to be "0.1 to 2 ppm."

According to Dr. Lo, the zirconium content of polymers made in accordance with the examples of Welborn contain from 61 ppm to 846 ppm zirconium (CX-1, page 21, Table 2) (*see also* Finding 36). There is no discussion of zirconium content in the Welborn patent. Hence, the patent cannot *per se* serve to show that one having ordinary skill in the art would have regarded zirconium content as a significant matter at the time Welborn filed the patent application which matured into the Welborn patent. Furthermore, in presenting his declaration (*see* Findings 38-43), Dr. Welborn did not discuss zirconium content or its significance.

[9] If we assume that Welborn describes polymers which comprise granules which are "non-porous" and have a settled bulk density of from 25 to 36 lb/ft_3, then Cheruvu claims 22-33 differ from Welborn in that Welborn does not describe Cheruvu's zirconium content of 0.1 to 2 ppm. The question then becomes, would the subject matter of Cheruvu's claims 22-33 have been obvious notwithstanding Welborn's failure to describe Cheruvu's zirconium content range? In this respect, we conclude that Bamberger has failed to establish obviousness within the meaning of 35 U.S.C. §103.

There is no discussion in the prior art relied upon by Bamberger about zirconium and/or its significance. Dr. Speed's conclusion that the polymer having 10 ppm zirconium is essentially no different, in terms of other properties, that a polymer having 0.1 to 2 ppm zirconium is not an explanation of why one skilled in the art would want, or be motivated, to change the zirconium content of the Welborn examples of 61-849 ppm to 0.1-2 ppm, as required by Cheruvu claims 22-33. If it is Dr. Speed's position that there is no practical difference between a polymer having a zirconium content of 10 ppm and a polymer having a zirconium content of 0.1 to 2 ppm, why would anyone have been motivated, based on the prior art before us, to lower zirconium content to 0.1 to 2 ppm?

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[19] In connection with other preliminary motions, Bamberger has pointed to col. 2, line 67 through col. 3, line 4 of the Cheruvu patent: "When made in the gas phase fluid bed process, on pilot plant scale, the product is dry and solvent-free and comprises spherical, non-porous particles * * *." According to Bamberger, Cheruvu's statement constitutes an admission that gas phase fluid bed processes result in non-porous particles. We disagree that Cheruvu's "admission" is as broad as Bamberger suggests. At most, the admission applies to polymers made in a 'pilot plant' and then only to those made in accordance with the Cheruvu invention. There is no admission by Cheruvu that all gas phase products necessarily are "non-porous."

[20] See Bamberger Reply 4 (Paper No. 229), page 5.

[21] See Cheruvu Opposition 5 (Paper No. 129), pages 6-8.

To some extent Bamberger would say to the rationale set out in the previous paragraph, "so what!" and would point to the Welborn experimental results set out in Table 1 of the ex parte Welborn declaration (*see* Finding 42; CX-3, page 47).[22] Bamberger can make out a case that polymers made in two of the Welborn experimental runs contain zirconium contents of 1.17 and 1.68 ppm, which of course are within Cheruvu's claimed range of 0.1 to 2. With the exception of Cheruvu claim 33, Bamberger can also make out a case that polymers made in those two experimental runs have a M_w/M_n which is the same as the polymers of Cheruvu claims 22-32, because Cheruvu claims 22-32 do not have a M_w/M_n limitation. Bamberger arguably can make out a case that Welborn experimental run 14126-147, which achieved a M_w/M_n of 2.34 falls within the M_w/M_n range of about 2.5 to about 3.0 of Cheruvu claim 33, if the assumption made in Finding 17(a)[23] is adhered to. But, there are numerous other differences between what Dr. Welborn explicitly sets out in Table 1 with respect to the properties of the polymers there described and the as synthesized compositions of Cheruvu's claims 22-33. Bamberger has not undertaken to explain what those differences are and why the subject matter, as a whole, of Cheruvu's claims 22-33 would have been obvious notwithstanding those differences. We decline to search the record in the first instance to determine whether there is evidence which might support a holding of obviousness based on that evidence combined with the revelations in the Welborn declaration.

Bamberger has failed to establish that the subject matter of Cheruvu claims 22-33 or Cheruvu claim 35 would have been obvious to a person having ordinary skill in the art within the meaning of 35 U.S.C. §103.

4. *Additional observation*

We close this chapter of the interference with the following observation. We are totally puzzled as to why Bamberger did not undertake experiments to duplicate the precise conditions in one or more of the examples of Welborn and report the properties of polymers obtained from duplicating those conditions. *Compare Standard Oil Co. (Indiana) v. Montedison S.p.A.*, 664 F.2d at 371-373, 212 USPQ at 340-342. There manifestly was a full opportunity for Bamberger to have done so, and there was more than ample reason to do so in this interference where Bamberger's burden of proof (preponderance of the evidence) was lower than it would have been in the civil action (clear and convincing). Apparently, Bamberger elected to bottom its litigation strategy in this interference and in the *Mobil v. Exxon* civil action[24] solely on the Lo experiments.

I. Order

Upon consideration of Bamberger Preliminary Motion 4, and for the reasons given, it is

ORDERED that Bamberger Preliminary Motion 4 is *denied*.

[22] We have assumed that the Welborn declaration in the file of the Welborn patent is prior art under 35 U.S.C. §102(b), given that the patent issued more than one year prior to the date Cheruvu filed the application which matured into the Cheruvu patent and a patent file is available to the public on the date a patent issues. 37 CFR §1.11 (1988). Hence, as of February 28, 1989, the Welborn declaration was available to the public.

[23] One having ordinary skill in the art would interpret "a M_w/M_n of from about 2.5 to about 3.0" to mean "a M_w/M_n of from 2.3 to 3.3."

[24] As we understand events, a trial in the civil action was imminent at the time the interference was declared, or at least in June of 1997. Hence, if any independent experimental work was ready for presentation at trial, it manifestly could have been presented in this interference.

U.S. Patent and Trademark Office
Board of Patent Appeals and Interferences

Ex parte Kimura

Appeal No. 1999-1918

Decided July 13, 2000
(Unpublished)

PATENTS

1. Practice and procedure in Patent and Trademark Office — Prosecution — Rules and rules practice (§110.0905)

Practice and procedure in Patent and Trademark Office — Interference — Estoppel (§110.1704)

Rejection based on estoppel arising out of interference, and rejection based on recap-

LEXSEE 57 USPQ2D 1161

RICHARD RUIZ and FOUNDATION ANCHORING SYSTEMS, INC., Plaintiffs-Cross Appellants, v. A.B. CHANCE COMPANY, Defendant-Appellant.

99-1557, 99-1563

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

234 F.3d 654; 2000 U.S. App. LEXIS 31116; 57 U.S.P.Q.2D (BNA) 1161

December 6, 2000, Decided

SUBSEQUENT HISTORY: Judgment entered by, On remand at *Ruiz v. A.B. Chance Co., 2003 U.S. Dist. LEXIS 24044* (E.D. Mo., Mar. 10, 2003)

PRIOR HISTORY: [**1] Appealed from: United States District Court for the Eastern District of Missouri. Judge Catherine D. Perry. *Ruiz v. A.B. Chance Co., 1999 U.S. Dist. LEXIS 23326* (E.D. Mo., Aug. 5, 1999)

DISPOSITION: AFFIRMED-IN-PART, VACATED-IN-PART, and REMANDED.

LexisNexis(R) Headnotes

COUNSEL: W. Michael Gardner, Dady & Garner, P.A., of Minneapolis, Minnesota; and Matthew A. Rosenberg, Herzog, Crebs & McGhee, LLP, of St. Louis, Missouri, argued for plaintiffs-cross appellants. With them on the brief was Mark R. Dunn, Herzog, Crebs & McGhee, LLP. Of counsel was Cheryl A. Stanton, Dady and Garner.

John H. Quinn, III, Armstrong Teasdale LLP, of St. Louis, Missouri, argued for defendant-appellant. With him on the brief was Andrew B. Mayfield. Of counsel was Lisa M. Wood.

JUDGES: Before NEWMAN, MICHEL, and RADER, Circuit Judges.

OPINIONBY: MICHEL

OPINION: [*659]

MICHEL, Circuit Judge.

The A.B. Chance Company ("Chance") appeals the decision of the United States District Court for the Eastern District of Missouri finding claims 1 through 4 and claims 6 through 8 of U.S. Patent Nos. *5,139,368* ("the *'368* patent") and *5,171,107* ("the *'107* patent") invalid for obviousness under *35 U.S.C. § 103* (1999). On cross-appeal, Richard Ruiz and Foundation Anchoring Systems, Inc. (a/k/a "Fasteel") argue that the [**2] district court erred in the following rulings: 1) finding infringement of claims 1 through 4 and claims 6 through 8 of the *'368* and *'107* patents; 2) denying recovery of attorney fees under *35 U.S.C. § 285* (1994) due to Chance's alleged inequitable conduct; 3) concluding that neither party was prevailing for the purpose of awarding costs under *Fed. R. Civ. P. 54(d)*; and 4) granting summary judgment against Ruiz and Fasteel on their claims of [*660] discrimination pursuant to *42 U.S.C. § 1981*, breach of contract, breach of the implied duty of good faith and fair dealing, equitable and promissory estoppel, and tortious interference with contract and prospective business relations.

Because the district court failed to make factual findings on obviousness as set forth by the Supreme Court in *Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 U.S.P.Q. (BNA) 459, 467, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966)*, we must vacate the judgment of invalidity and remand to the district court. On remand, we instruct the district court to make specific Graham findings on: 1) the reason, suggestion, or motivation present in the prior art, in the knowledge [**3] of those of ordinary skill in the art, or in the problem of foundation settling which clearly and particularly would lead one of ordinary skill in the art to combine screw anchors and metal brackets; 2) the level of ordinary skill in the art; and 3) whether,

and to what effect, evidence of secondary considerations, such as commercial success, long-felt but unresolved need, failure of others, copying, and unexpected results, is probative in the obviousness analysis.

We affirm the district court's finding of infringement, and its refusal to award attorney fees and costs. We also affirm the district court's grant of summary judgment on the non-patent claims.

Background

A. The Chance Patents

Since the 1970s, Chance has manufactured and sold screw anchors, also known as helical anchors, for stabilizing and supporting electrical transmission over tower legs. A screw anchor consists of "an elongated shaft presenting an earth-penetrating tip and a transversely extending load-bearing member." *'368* patent, col. 2, ll. 32-35. In late 1988, Chance began using screw anchors with metal brackets to stabilize residential and commercial structures. The craft of stabilizing a sinking structure **[**4]** is known as "underpinning." In March 1989, Chance engineers demonstrated a prototype of its invention to Richard Fuller and Stan Rupiper, who used a method of underpinning employing screw anchors with concrete haunches. As the district court noted, "at that time, neither Fuller nor Rupiper made any indication that they felt they had already designed a bracket or had already been using a bracket or a support of the same type."

In 1992, the Patent and Trademark Office ("PTO") issued Chance the *'368* and *'107* patents, entitled "Method of Underpinning Existing Structures," covering its methods for underpinning residential and commercial foundations using screw anchors and metal brackets. The *'107* patent is a continuation of the *'368* patent, which in turn is a continuation-in-part of patent application serial number 07/464,937 (issuing as U.S. Patent No. *5,011,336* ("the *'336* patent")). The Chance patents are "concerned with an improved anchor apparatus designed to support and resist settling of structural foundations" particularly for "existing building structures having a predetermined weight and which may or has experienced settlement or movement." *'368* patent, col. 1, ll. 13-20. In the **[**5]** method claimed in the *'368* patent, the metal bracket connects the screw anchor to the foundation and transfers the dead weight and live load of the foundation to each screw anchor. See id., col. 2, ll. 20-26. Users of the method place the screw anchor adjacent to the footing, and then rotate and screw the anchor "below the footing until the upper end of the shaft is adjacent the footing and a predetermined resistance to rotation of the anchor has been achieved." Id., col. 2, ll. 31-39. "Upon release of rotational torque on the anchor shaft so that the anchor may return to its unstressed state, the anchor shaft and foundation and/or footing are connected via a [metal] bracket assembly to establish the desired load-bearing relationship." Id., col. 2, ll. 45-50.

[*661]

B. The Prior Art

1. The Gregory Patents

U.S. Patent Nos. *4,911,580* ("the *'580* patent") and *4,765,777* ("the *'777* patent"), issued to Gregory, disclose an apparatus and method for raising and supporting a structure using push piers and metal brackets. In the Gregory method, the user attaches a metal bracket to the foundation and drives the push piers through the bracket and into the ground until **[**6]** encountering resistance from soil friction or impinging upon bedrock. *'580* patent, col. 4, ll. 21-26. Continued force lifts the foundation, and transfers the weight of the structure to the pier. Further movement of the foundation may take place following transfer of the load, particularly if the pier is held in place by soil or friction.

2. The Fuller and Rupiper Method

The Fuller and Rupiper method uses screw anchors with concrete haunches as an underpinning solution. In this method, popular in settings having high seismic activity such as California, the user excavates the earth around and beneath the foundation to install a screw anchor and to place steel reinforcing rods in the excavation. The contractor then pours concrete into the excavation and allows the concrete to dry before backfilling the excavation. In the concrete haunch method, the weight of the structure is not transferred to the screw anchor until there is further downward settlement of the foundation onto the hardened concrete. This method must also be performed in a specific sequence, as the screw anchor must be installed before the concrete hardens, and the resulting connection is formed.

C. The [7] Distributorship Agreement between Chance and Fasteel**

In April 1989, Ruiz incorporated Fasteel to provide building stabilization services using Chance's products and methods. Ruiz is Hispanic, and is the sole owner of Fasteel. In June 1989, Chance and Ruiz entered into a "Distributorship Agreement," whereby Chance appointed Fasteel to act as an authorized, non-exclusive distributor. The Agreement contained a "best efforts" clause. For the next few years, Ruiz and Fasteel sold Chance products exclusively and only used the Chance underpinning method. Ruiz and Fasteel also recruited dealers for the Chance method, created marketing materials, developed products, and conducted training programs. Ruiz extolled

the advantages of the Chance methods over the prior art to other contractors.

In the 1990s, Ruiz expanded his business by forming other companies. In 1993, Ruiz incorporated Foundation Technology, Inc. ("FTI"), originally the Kansas City, Missouri, office of Fasteel. Ruiz was the sole owner of FTI. At first, FTI only sold Chance products, but by 1997, it was also the distributor for foundation repair parts not manufactured by Chance. In 1995, Ruiz and Steven Gregory established **[**8]** R.J. Enterprises, L.L.C., to sell Ram Jack products, which were competitive with Chance's products. The Ram Jack products utilized the Gregory patented push pier method. Ruiz had a 51 percent interest in R.J. Enterprises. Ruiz also set up Advanced Building Technology, Inc. ("ABT"), wholly-owned by Ruiz, to sell Ram Jack products. According to Ruiz, FTI or ABT would distribute Ram Jack products in locations where Ruiz was already a Chance distributor. R.J. Enterprises would service those areas where Ruiz did not distribute Chance products.

In 1996, Chance became aware that Ruiz, through one of his companies, had offered Ram Jack products to a dealer in Chance territory for which Ruiz was responsible. Chance requested that Ruiz stop the activity. Ruiz wrote Chance a letter arguing that Chance had allowed other distributors to sell competitive products, and that he believed Chance's actions to be motivated by a discriminatory purpose.

[*662] On February 18, 1997, Gary Bartee, a Chance manager, and Mike Estes, Chance's controller, signed a "Distributor Termination Request" form. The form stated that Chance was terminating Fasteel because "Fasteel, Inc., is establishing itself to promote and **[**9]** sell competitive underpinning systems through the existing Chance system dealers." The next day, Jeff Witten, the Senior Vice-President of Chance's parent company, terminated Fasteel's distributorship pursuant to a provision in the Distributorship Agreement, which permitted termination "for any reason" upon one year's notice.

After the termination, Ruiz began to market and install a combination of screw anchors manufactured by Dixie and metal brackets manufactured by Gregory. Chance alleged that Ruiz's activities infringed its method patents, and ordered Ruiz to cease his activities. Ruiz refused.

D. The District Court Proceedings

On August 11, 1997, Ruiz and Fasteel filed suit in the United States District Court for the Eastern District of Missouri, alleging that Chance's termination of the Distributorship Agreement constituted discrimination under section 1981, breach of contract, breach of the implied duty of good faith and fair dealing, promissory and equitable estoppel, and tortious interference with contract and prospective business relations. Ruiz and Fasteel also sought a declaration of noninfringement and invalidity of Chance's two method patents (the *'368* and **[**10]** *'107* patents) and Chance's apparatus patent, U.S. Patent No. *5,120,163* ("the *'163* patent"). Chance filed a counterclaim alleging infringement of the *'368*, *'107*, and *'163* patents. In a well-reasoned and thorough opinion, on April 20, 1999, Judge Catherine Perry granted summary judgment against Ruiz and Fasteel on the non-patent claims.

After holding a Markman hearing and issuing an order construing the claims at issue, the district court held a bench trial on invalidity and infringement of the Chance patents. During trial, Chance dismissed its claim that Ruiz and Fasteel had infringed the *'163* patent, and the parties narrowed the infringement issue to whether Ruiz and Fasteel had infringed claims 1 through 4 and claims 6 through 8 of the *'368* and *'107* patents. On May 25, 1999, the district court, in an opinion stated from the bench, found that Ruiz and Fasteel had infringed claims 1 through 4 and claims 6 through 8 of the Chance patents, and that Chance had proved with sufficient certainty $ 540,000 in damages. The district court, however, entered judgment for Ruiz and Fasteel, because they had showed clear and convincing evidence that claims 1 through 4 and claims 7 and 8 were **[**11]** invalid for obviousness in light of the teachings of the use of push piers and metal brackets as taught by the Gregory patents in combination with the use of screw anchors and concrete haunches as used by Fuller and Rupiper. On August 5, 1999, the district court amended its judgment, and found that Ruiz and Fasteel had offered clear and convincing evidence that claim 6 of the *'368* and *'107* patents was also invalid for obviousness.

Opinion

I. Obviousness under *35 U.S.C. § 103*

A claimed invention is unpatentable due to obviousness if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." *35 U.S.C. § 103*(a). A patent is presumed valid, and the burden of establishing invalidity as to any claim of a patent rests upon the party asserting such invalidity. *35 U.S.C. § 282* (1994). In order to determine obviousness as a legal matter, four factual inquiries must be made concerning: 1) the scope and content of the prior art; 2) the level of ordinary skill in the art; 3) the **[**12]** differences between the claimed invention and the prior art; and 4) secondary considerations of nonobviousness, which in

case law is often said **[*663]** to include commercial success, long-felt but unresolved need, failure of others, copying, and unexpected results. *Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 U.S.P.Q. (BNA) 459, 467, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966); Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 877, 27 U.S.P.Q.2D (BNA) 1123, 1128 (Fed. Cir. 1993).* We review the ultimate determination of obviousness de novo, while the underlying factual inquiries are reviewed for clear error. See *Weatherchem Corp. v. J.L. Clark, Inc., 163 F.3d 1326, 1331, 49 U.S.P.Q.2D (BNA) 1001, 1006 (Fed. Cir. 1998).* "'A finding is clearly erroneous when, although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed.'" *In re Graves, 69 F.3d 1147, 1151, 36 U.S.P.Q.2D (BNA) 1697, 1700 (Fed. Cir. 1995)* (quoting *United States v. United States Gypsum Co., 333 U.S. 364, 395, 92 L. Ed. 746, 68 S. Ct. 525 (1948)). Fed. R. Civ. P. 52(c)* is applicable to **[**13]** all findings of the four inquiries in Graham. Rule 52(c) says that judgments must be "supported by findings of fact and conclusions of law."

In determining obviousness under section 103, the district court said that the issue "is whether a combination of the teachings of the prior art would have suggested what the patent does." The district court added that "if the prior art implicitly suggests combining the teachings of the prior art, and the claimed invention doesn't do any more than combine them, then it is invalid." Applying those standards, the district court concluded that the *'368* and *'107* patents "would have been obvious to that hypothetical ordinary person skilled in the art of foundation underpinning based on the teachings of the Gregory *'580* and *'777* patents, combined with what Fuller and Rupiper were doing with helicals [screw anchors] and concrete haunches." The district court noted that "once the idea emerged to use helicals [screw anchors] for remedial foundation work, the need for a bracket was apparent." This conclusion of what the court called a "text book case of obviousness" was based on "[the judge's] study about what was disclosed, the prior art, the **[**14]** undisputed testimony in this case, and those parts of the testimony of the witnesses that [the judge] believed." The district court found that all relevant prior art was disclosed to the patent examiner. The district court's opinion did not mention Graham, nor did it provide an analysis of what was disclosed, the prior art, or the testimony presented by the parties. Chance appeals the district court's finding of invalidity, arguing that the district court erred in failing to conduct a Graham analysis.

A. Application of the Graham Factors

Our precedent clearly establishes that the district court must make Graham findings before invalidating a patent for obviousness. See *Jones v. Hardy, 727 F.2d 1524, 1529, 220 U.S.P.Q. (BNA) 1021, 1025 (Fed. Cir. 1984)* ("Graham was cited but its guidance was not applied, resulting in the application of hindsight and speculation."); *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc., 807 F.2d 955, 961, 1 U.S.P.Q.2D (BNA) 1196, 1200 (Fed. Cir. 1986)* ("When significant legal errors are reflected in the opinion, . . . which themselves shed doubt of the district court's use of Graham, the need for findings **[**15]** becomes greater and their absence rises to the level of error."). In *Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 228 U.S.P.Q. (BNA) 90 (Fed. Cir. 1985),* overruled on other grounds by *Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059, 46 U.S.P.Q.2D (BNA) 1097 (Fed. Cir. 1998),* we said:

> In patent cases, the need for express Graham findings takes on an especially significant role because of an occasional tendency of district courts to depart from the Graham test, and from the statutory standard of unobviousness that it helps determine, to the tempting but forbidden zone of hindsight. Thus, we must be convinced from the opinion that the district court actually applied Graham and must be presented with enough **[*664]** express and necessarily implied findings to know the basis of the trial court's opinion.

Id. at 873, 228 U.S.P.Q. (BNA) at 98 (internal citation omitted). The necessity of Graham findings is especially important where the invention is less technologically complex, as is the case here. See *In re Dembiczak, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999),* abrogated on other grounds by *In re Gartside, 203 F.3d 1305, 53 U.S.P.Q.2D (BNA) 1769 (Fed. Cir. 2000).* **[**16]** In such a case, the danger increases that "the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.'" Id. (internal citation omitted). The fact that the district court does not mention Graham is not dispositive, as it is not reversible error if "the required factual determinations were actually made and it is clear that they were considered while applying the proper legal standard of obviousness." *Specialty Composites v. Cabot Corp., 845 F.2d 981, 990, 6 U.S.P.Q.2D (BNA) 1601, 1607 (Fed. Cir. 1988);* see also *Loctite, 781 F.2d at 873, 228 U.S.P.Q. (BNA) at 98.*

The district court's failure to base its obviousness inquiry on the explicit findings relating to the Graham factors can require that the judgment be vacated and the

case remanded for those findings to be made. In Custom Accessories, we said:

> If, on review of a determination of obviousness, an appellant shows that the district court incorrectly applied the law, we will not reverse (i.e., hold that defendant below failed to prove obviousness) **[**17]** unless appellant also convinces us that a proper application of the law to the facts of record would change the result. Sometimes, however, an appellant will convince us that the law was incorrectly applied, but there are inadequate findings by the district court to enable us to determine independently whether defendant below did or did not prove that the invention would have been obvious . . . In such circumstances, rather than find material facts ourselves, we must remand to allow the district court to do so.

Custom Accessories, 807 F.2d at 963, 1 U.S.P.Q. (BNA) at 1202; see also *Jones, 727 F.2d at 1531, 220 U.S.P.Q. (BNA) at 1027* ("Where the evidence is conflicting or credibility determinations are required, the judgment should be vacated rather than reversed, and the case should be remanded for further proceedings."); *Loctite, 781 F.2d at 875, 228 U.S.P.Q. (BNA) at 97* (vacating and remanding due to failure to make Graham findings); *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 446, 230 U.S.P.Q. (BNA) 416, 418 (Fed. Cir. 1986)* (vacating trial court opinion and remanding due to absence of Graham findings); *Greenwood v. Hattori Seiko Co. Ltd., 900 F.2d 238, 241, 14 U.S.P.Q.2D (BNA) 1474, 1474 (Fed. Cir. 1990)* **[**18]** (vacating summary judgment of obviousness because district court failed to undertake the required Graham analysis).

1. Scope and Content of the Prior Art/Differences Between the Claimed Invention and the Prior Art

The district court erred in failing to make clear and particular findings as to why the Gregory patents and the Fuller and Rupiper method are within the appropriate scope of the prior art in determining the obviousness of the *'368* and *'107* patents. The scope of the prior art includes art that is "reasonably pertinent to the particular problem with which the invention was involved." *Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1535, 218 U.S.P.Q. (BNA) 871, 876 (Fed. Cir. 1983).* In order to prevent a hindsight-based obviousness analysis, we have clearly established that the relevant inquiry for determining the scope and content of the prior art is whether there is a reason, suggestion, or motivation in the prior art or elsewhere that would have led one of ordinary skill in the art to combine the references. See, e.g., *In re Rouffet, 149 F.3d 1350, 1359, 47* **[*665]** *U.S.P.Q.2D (BNA) 1453, 1459 (Fed. Cir. 1998)* ("The Board must identify specifically **[**19]** . . . the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Dembiczak, 175 F.3d at 999, 50 U.S.P.Q.2D (BNA) at 1617* ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."). "Determining whether there is a suggestion or motivation to modify a prior art reference is one aspect of determining the scope and content of the prior art, a fact question subsidiary to the ultimate conclusion of obviousness." *Sibia Neurosciences, Inc. v. Cadus Pharma. Corp., 225 F.3d 1349, 1356, 55 U.S.P.Q.2D (BNA) 1927, 1931 (Fed. Cir. 2000); Tec Air, Inc. v. Denso Mfg., Inc., 192 F.3d 1353, 1359, 52 U.S.P.Q.2D (BNA) 1294, 1298 (Fed. Cir. 1999)* (stating that the factual underpinnings of obviousness include whether a reference provides a motivation to combine its teachings with those of another reference).

The district court concluded that it would have been obvious to combine screw **[**20]** anchors and metal brackets, because the need for a bracket "was apparent." Because there is "a general rule that combination claims can consist of combinations of old elements as well as new elements," *Clearstream Wastewater Sys. v. Hydro-Action, Inc., 206 F.3d 1440, 1446, 54 U.S.P.Q.2D (BNA) 1185, 1189-90 (Fed. Cir. 2000),* "the notion . . . that combination claims can be declared invalid merely upon finding similar elements in separate prior patents would necessarily destroy virtually all patents and cannot be the law under the statute, § 103." *Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1575, 1 U.S.P.Q.2D (BNA) 1593, 1603 (Fed. Cir. 1987); Arkie Lures, Inc. v. Gene Larew Tackle, Inc., 119 F.3d 953, 957, 43 U.S.P.Q.2D (BNA) 1294, 1297 (Fed. Cir. 1997)* ("It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art, to combine the elements."). The test is not whether one device can be an appropriate substitute for another. See *Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1383, 231 U.S.P.Q. (BNA) 81, 93 (Fed. Cir. 1986)* ("Focusing **[**21]** on the obviousness of substitutions and differences instead of on the invention as a whole, as the district court did in frequently describing the claimed invention as the mere substitution of monoclonal for polyclonal antibodies in a sandwich assay, was a legally improper way to simplify the difficult determination of obviousness."). The district

court must make specific findings establishing why it was "apparent" to use the screw anchor of the Fuller and Rupiper method in combination with the metal bracket as used in the Gregory patents.

Our court has provided a great deal of guidance on what kind of factual findings the district court may make in determining a reason, suggestion, or motivation to combine. The reason, suggestion, or motivation to combine may be found explicitly or implicitly: 1) in the prior art references themselves; 2) in the knowledge of those of ordinary skill in the art that certain references, or disclosures in those references, are of special interest or importance in the field; or 3) from the nature of the problem to be solved, "leading inventors to look to references relating to possible solutions to that problem." *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1572, 37 U.S.P.Q.2D (BNA) 1626, 1630 (Fed. Cir. 1996)* **[**22]** (internal citations omitted); *In re Rouffet, 149 F.3d at 1357, 47 U.S.P.Q.2D (BNA) at 1458.* While the references need not expressly teach that the disclosure contained therein should be combined with another, see *Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472, 43 U.S.P.Q.2D (BNA) 1481, 1489 (Fed. Cir. 1997),* the showing of combinability must be "clear and particular." *In re Dembiczak, 175 F.3d at 999, 50 U.S.P.Q.2D (BNA) at 1617.*

[*666] There was a great deal of evidence presented to the district court that the Chance method represented an improvement over the prior art. According to the *'368* patent, the Chance method is an improvement over the prior art because the Chance method is "easy to install," "low cost," and "readily installable from the outside of a house or other structure." *'368* patent, col. 2, ll. 3-9. Chance also offered testimony that in its method, there is immediate verification of successful stabilization, because the appropriate resistance is mathematically calculated. In the Fuller and Rupiper and Gregory methods, the user cannot always determine whether installation occurred successfully. There was also evidence before the district **[**23]** court that the Fuller and Rupiper and Gregory methods may solve different problems. The Fuller and Rupiper method is found to be useful in California, because the use of concrete is especially important in underpinning foundations in settings with a high degree of seismic activity.

From the district court's opinion, we are unable to determine whether the district court evaluated this evidence in its obviousness analysis. Evidence which suggests that the combination of two references would suggest the resulting improvement is one way in which to demonstrate a reason, suggestion, or motivation to combine. See *In re Sernaker, 702 F.2d 989, 994, 217 U.S.P.Q. (BNA) 1, 5 (Fed. Cir. 1983)* (stating that the district court could also determine whether the prior art offers a motivation to combine based on "whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention in suit"); *Hybritech, 802 F.2d at 1380, 231 U.S.P.Q. (BNA) at 91* ("At most, these articles are invitations to try . . . but do not suggest how that **[**24]** end might be accomplished."). The district court made no finding on whether the Chance method represented an improvement over the prior art. If there was an improvement, it may or may not be true that any resulting improvement was due to the fact that there was evidence in the prior art, in the knowledge of those of ordinary skill in the art, or in the nature of the problem that would have suggested a reason, suggestion, or motivation that combination of the screw anchor with a metal bracket would have led to an improvement.

The district court further made no findings as to why the field of foundation underpinning would include references to both the Fuller and Rupiper and the Gregory methods, despite evidence of differences. Specifically, there were no findings on whether there was a disadvantage to the prior systems, such that the "nature of the problem" would have motivated a person of ordinary skill to combine the prior art references. "Indeed, that the elements noted by the court lay about in the prior art available for years to all skilled workers, without, as the court found, suggesting anything like the claimed inventions, is itself evidence of nonobviousness." *Panduit, 810 F.2d at 1577, 1 U.S.P.Q.2D (BNA) at 1605.* **[**25]**

2. Level of Ordinary Skill in the Art

The district court defined the person of ordinary skill in the art to be someone skilled in the art of foundation underpinnings. The determination of the level of ordinary skill in the art is an integral part of the Graham analysis. See *Custom Accessories, 807 F.2d at 962, 1 U.S.P.Q.2D (BNA) at 1201* ("Without [a determination of the level of ordinary skill in the art], a district court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one with ordinary skill in the art.") (internal citation omitted). Factors that may be considered in determining the ordinary level of skill in the art include: 1) the types of problems encountered in the art; 2) the prior art solutions to those problems; 3) the rapidity with which innovations are made; 4) the sophistication of the technology; and 5) **[*667]** the educational level of active workers in the field. See *id. at 962, 1 U.S.P.Q.2D (BNA) at 1201* (citing *Envtl. Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 697, 218 U.S.P.Q. (BNA) 865, 868-69 (Fed. Cir. 1983)).* "Not all such

factors may [**26] be present in every case, and one or more of them may predominate." Id. Some of our cases indicate that the failure to make explicit findings on the level of ordinary skill is not always reversible error. See, e.g., *Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1574, 230 U.S.P.Q. (BNA) 81, 86 (Fed. Cir. 1986); Union Carbide Corp. v. American Can Co., 724 F.2d 1567, 1573, 220 U.S.P.Q. (BNA) 584, 589 (Fed. Cir. 1984); Chore-Time Equip., Inc. v. Cumberland Corp., 713 F.2d 774, 779 n.2, 218 U.S.P.Q. (BNA) 673, 676 n.2 (Fed. Cir. 1983).* However, as we noted in Custom Accessories, in those cases, "it was not shown that the failure to make a finding or an incorrect finding on level of skill influenced the ultimate conclusion under section 103 and, hence, constituted reversible error." *Custom Accessories, 807 F.2d at 963, 1 U.S.P.Q.2D (BNA) at 1201.*

It is disputed whether Ruiz and Fasteel offered clear and convincing evidence that others of ordinary skill in the art would have thought the Chance inventions obvious. Robert Jones, a distributor for Chance, testified that he first used a metal bracket with a screw anchor in a "tie-back" or lateral [**27] retention in October or November 1989. However, Jones also testified that he possessed "greater than ordinary skill in the art," since he had been building and designing steel load transfer hardware for over thirty years. Without a more specific finding of what the level of ordinary skill in the art is, the district court cannot adequately determine whether Jones' testimony would support a finding of obviousness.

Accordingly, on remand, while "we do not reverse or vacate solely because of a failure to make the level of skill finding," we do "consider the district court's failure to make that and other Graham findings as evidence that Graham was not in fact applied." Id.

3. Secondary Considerations

The district court erred in failing to consider, or at least to discuss, evidence of secondary considerations. Our precedents clearly hold that secondary considerations, when present, must be considered in determining obviousness. See, e.g., *Loctite, 781 F.2d at 873, 228 U.S.P.Q. (BNA) at 98* ("Secondary considerations . . .,when present, must be considered."); *Simmons Fastener Corp. v. Ill. Tool Works, Inc., 739 F.2d 1573, 1575, 222 U.S.P.Q. (BNA) 744, 746 (Fed. Cir. 1984)* [**28] ("Only after all evidence of nonobviousness has been considered can a conclusion on obviousness be reached."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 306, 227 U.S.P.Q. (BNA) 657, 662 (Fed. Cir. 1985)* ("Just as it is legal error for a district court to fail to consider relevant evidence going to secondary considerations, it may be legal error for a district court to presuppose that all evidence relating to secondary considerations, when considered with the other Graham indicia relating to the obviousness/nonobviousness issue, cannot be of sufficient probative value to elevate the subject matter of the claimed invention to the level of patentable invention."). Indeed, in Stratoflex, we said:

> Evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

Stratoflex, 713 F.2d at 1538, 218 U.S.P.Q. (BNA) at 879. Such evidence "may be sufficient to overcome [**29] a prima facie case of obviousness." *In re Beattie, 974 F.2d 1309, 1313, 24 U.S.P.Q.2D (BNA) 1040, 1043 (Fed. Cir. 1992);* see also *Sibia, 225 F.3d at 1358, 55 U.S.P.Q.2D (BNA) at 1933* ("The mere existence of . . . licenses [i.e., secondary considerations] is [*668] insufficient to overcome the conclusion of obviousness, as based on the express teachings in the prior art that would have motivated one of ordinary skill to modify . . . cells to be used with unknown compounds."). Our precedents also establish that failure to cite secondary considerations, alone, is not reversible error. See *Brown & Williamson v. Philip Morris, 229 F.3d 1120, 1131 (Fed. Cir. 2000)* (stating that failure of the district court to consider certain objective evidence of nonobviousness was harmless error, because it "cannot overcome the strong evidence of nonobviousness").

In the present case, Chance presented testimony that the Chance method enjoyed success with those in the underpinning industry. The number of dealers using the Chance method rose from 34 in 1991 to 209 in 1999. This increase in dealers contributed to a 20% annual increase in Chance's sales, compared to a 5.5% annual [**30] growth rate in the construction materials industry as a whole. Chance presented further evidence that dealers attributed an increase in business to the Chance method. Installers switched from competing methods, and testified as to a nexus between their commercial success and their use of the Chance underpinning method. Chance also presented testimony that Rupiper, one of the inventors of the prior art, had expressed skepticism that Chance's prototype model offered advantages over the concrete haunch method. "Proceeding contrary to the accepted wisdom . . . is 'strong evidence of unobviousness.'" *In re Hedges, 783 F.2d 1038, 1041, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986)* (citing *W.L. Gore & Assoc., Inc. v. Garlock,*

Inc., 721 F.2d 1540, 1552, 220 U.S.P.Q. (BNA) 303, 312 (Fed. Cir. 1983)).

From the district court opinion, we are unable to determine whether the district court considered these factors, and found them insufficient to rebut a strong prima facie case of obviousness, or whether the district court failed to consider them at all in its obviousness calculus. See *In re Beattie, 974 F.2d at 1313, 24 U.S.P.Q.2D (BNA) at 1043.* Nor can we tell whether the **[**31]** judge made implicit findings after hearing testimony. Accordingly, we urge the district court to make findings as to: 1) whether secondary considerations rebut a prima facie case of obviousness; and 2) if the evidence of secondary considerations is probative, whether there is a nexus between the claimed invention and commercial success. See *Simmons, 739 F.2d at 1575, 222 U.S.P.Q. (BNA) at 746* ("A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.").

B. Conclusion

Accordingly, we vacate the district court's judgment and remand the case to the district court in order for Graham findings to be made. In Jones, we said that "where the evidence is conflicting or credibility determinations are required, the judgment should be vacated rather than reversed, and the case should be remanded for further proceedings (not excluding a new trial if the district court deemed it necessary)." *Jones, 727 F.2d at 1531, 220 U.S.P.Q. (BNA) at 1027.* In Jones, this court reversed the district court's conclusion of obviousness because probative **[**32]** facts were not in dispute, no credibility determinations needed to be made, and the litigation had been going on for ten years. See id. In this case, however, probative facts are in dispute, and credibility needs to be assessed. On remand, the district court will have an opportunity to assess the relevant evidence, and only if the court concludes that Ruiz and Fasteel presented clear and convincing evidence establishing facts that support obviousness, may it enter judgment in their favor on invalidity.

II. Infringement of the *'368* and *'107* Patents

"An infringement analysis entails two steps. The first step is determining **[*669]** the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device [or process] accused of infringing." *Markman v. Westview Instruments, Inc., 52 F.3d 967, 976, 34 U.S.P.Q.2D (BNA) 1321, 1326 (Fed. Cir. 1995)* (en banc), aff'd *517 U.S. 370, 38 U.S.P.Q.2D (BNA) 1461, 134 L. Ed. 2d 577, 116 S. Ct. 1384 (1996).* Claim construction is a question of law reviewed de novo. See *Cybor Corp. v. FAS Techs, Inc., 138 F.3d 1448, 1456, 46 U.S.P.Q.2D (BNA) 1169, 1174 (Fed. Cir. 1998)* **[**33]** (en banc). Comparing the properly construed claims to the accused device is a question of fact reviewed for clear error. See *Charles Greiner & Co. v. Mari-Med Mfg., Inc., 962 F.2d 1031, 1034, 22 U.S.P.Q.2D (BNA) 1526, 1528 (Fed. Cir. 1992).*

Claim 1 of the *'368* patent contains the following first step:

> 1. In a method of stabilizing the below-grade foundation of an existing building structure having a predetermined weight and an assumed live load, the improved steps of:
>
> providing a foundation support for the foundation at a plurality of positions along the foundation . . .

Claim 1 of the *'107* patent is the same.

In an opinion construing the claims of the *'368* and *'107* patents, the district court said that the "the term 'providing' [in claim 1] means that the support must be supplied or furnished at each location where stabilization is to occur." Because the "brackets are in existence and provided as required by the claims," the district court found that the Fasteel methods infringed claims 1 through 4 and claims 6 through 8 of the *'368* and *'107* patents. Alternatively, the district court found that Chance proved infringement under the doctrine of equivalents. **[**34]** Neither party disputes the district court's claim construction.

Ruiz and Fasteel contend that the district court erred in finding that their method of underpinning infringed the *'368* and *'107* patents. Ruiz and Fasteel argue that in their method, the bracket does not have to be located near the stabilizing positions when the screw anchor is screwed into the ground. Instead, the bracket may be located elsewhere, such as in a nearby truck or near a supply pile on the ground of the job site.

In Fasteel's method, because metal brackets are in existence and available for use by the installer, they are "provided" within the meaning of claim 1. There is nothing in the claims or specification which indicates that the metal bracket had to be physically attached to or located next to the foundation before the other steps in the method could proceed. Thus, we find that the district court did not commit clear error in finding that the Fasteel method infringed claims 1 through 4 and claims 6 through 8 of the *'368* and *'107* patents.

III. Attorney Fees under *35 U.S.C. § 285*

35 U.S.C. § 285 provides for the "award [of] reasonable attorney **[**35]** fees to the prevailing party" in "exceptional" patent infringement cases. Whether a case is "exceptional" under section 285 is a question of fact that we review under a clearly erroneous standard. See *Hoffmann-La Roche, Inc. v. Invamed, Inc., 213 F.3d 1359, 1365, 54 U.S.P.Q.2D (BNA) 1846, 1850 (Fed. Cir. 2000)*. The prevailing party must prove the exceptional nature of the case by clear and convincing evidence. See *Carroll Touch Inc. v. Electro Mech. Sys., Inc., 15 F.3d 1573, 1584, 27 U.S.P.Q.2D (BNA) 1836, 1845 (Fed. Cir. 1993)*. Only if a court finds that a prevailing party satisfies its burden of proving an exceptional case does it determine whether to award attorney fees. See *Pharmacia & UpJohn Co. v. Mylan Pharms., Inc., 182 F.3d 1356, 1359, 51 U.S.P.Q.2D (BNA) 1466, 1468 (Fed. Cir. 1999)*.

A finding of inequitable conduct can be the basis for awarding attorney fees under section 285. See *AB Chance v. RTE Corp., 854 F.2d 1307, 1312,* **[*670]** *7 U.S.P.Q.2D (BNA) 1881, 1885 (Fed. Cir. 1988)*. "Inequitable conduct resides in failure to disclose material information, or submission of false information, with an intent to deceive." *Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867, 872, 9 U.S.P.Q.2D (BNA) 1384, 1389 (Fed. Cir. 1988)* **[**36]** (internal citation omitted). Both materiality and intent must be proven by clear and convincing evidence. Id. Once the threshold levels of materiality and intent have been established, "those fact findings are balanced to make the determination whether 'the scales tilt to a conclusion that inequitable conduct occurred.'" *Manville Sales Corp. v. Paramount Sys., Inc., 917 F.2d 544, 551, 16 U.S.P.Q.2D (BNA) 1587, 1592 (Fed. Cir. 1990)* (internal citation omitted). "The more material the omission or the misrepresentation, the lower the level of intent required to establish inequitable conduct, and vice versa." *Critikon Inc. v. Becton Dickinson Vascular Access, Inc., 120 F.3d 1253, 1256, 43 U.S.P.Q.2D (BNA) 1666, 1668 (Fed. Cir. 1997)*. We review the threshold determinations of materiality and intent under the clearly erroneous standard of *Fed. R. Civ. P. 52(a)*. See *Kingsdown, 863 F.2d at 872, 9 U.S.P.Q.2D (BNA) at 1389*. We review the district court's ultimate determination of inequitable conduct under an abuse of discretion standard. See *id. at 876, 9 U.S.P.Q.2D (BNA) at 1389*.

The district court found that Ruiz and Fasteel failed to prove that material information **[**37]** had been withheld by clear and convincing evidence. Ruiz and Fasteel claim that in prosecuting the *'368* and *'107* patents, Chance failed to properly disclose the use of screw anchors as taught in the Fuller and Rupiper methods. The district court found that the screw anchor language was properly disclosed in the specification of the *'368* and *'107* patents. The district court said, "the earth anchor language in the specification combined with the reference to a piling and other materials in the patent file wrapper history are sufficient to disclose the Fuller Rupiper prior art." The district court also found that there was no evidence of intent to deceive.

We agree with the district court that Ruiz and Fasteel failed to offer clear and convincing evidence of the materiality of withholding information or of an intent to deceive. At the very least, the court's findings are not clearly erroneous. Accordingly, we affirm the district court's judgment of no liability for attorney fees.

IV. Award of Costs under *Fed. R. Civ. P. 54(d)*

Ruiz and Fasteel argue that the district court erred in holding that neither party was the prevailing party for the purpose of awarding costs pursuant **[**38]** to *Fed. R. Civ. P. 54(d)(1)*. Rule 54(d)(1) provides for the award of "costs other than attorneys' fees . . . to the prevailing party unless the court otherwise directs." A party who is successful in declaring a competitor's patent invalid is a prevailing party for purposes of the rule. See *Manildra Milling Corp. v. Ogilvie Mills, Inc., 76 F.3d 1178, 1183, 37 U.S.P.Q.2D (BNA) 1707, 1711 (Fed. Cir. 1996)*. An award of costs under Rule 54(d)(1) falls within the discretion of the trial court. See id. ("Even if a party satisfies the definition of prevailing party, the district court retains broad discretion as to how much to award, if any.").

In this case, Ruiz and Fasteel prevailed on the patent invalidity issue, but Chance prevailed on all of the other issues, including the non-patent issues. The district court did not err in refusing to award costs, for neither party prevailed sufficiently to require an award of costs and make a decision not to do so an abuse of discretion.

V. Non-Patent Claims

Ruiz and Fasteel also cross appeal the district court's grant of summary judgment on their non-patent claims. "Summary judgment is appropriate when there is no genuine **[**39]** issue as to any material fact and . . . the moving party is entitled to **[*671]** judgment as a matter of law." *Fed. R. Civ. P. 56(c)*. Summary judgment is inappropriate "if the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248, 91 L. Ed. 2d 202, 106 S. Ct. 2505 (1986)*. When deciding a summary judgment motion, all of the nonmovant's evidence is to be credited, and all justifiable inferences drawn in the nonmovant's favor. See *id. at 255*. We review a district court's grant of summary judgment de

novo. See *Celotex Corp. v. Catrett, 477 U.S. 317, 323, 91 L. Ed. 2d 265, 106 S. Ct. 2548 (1986).*

A. Discrimination under *42 U.S.C. § 1981*

Ruiz and Fasteel allege that Chance terminated the Distributorship Agreement in violation of *42 U.S.C. § 1981* (1994), because Ruiz is Hispanic. *42 U.S.C. § 1981* provides that all persons within the jurisdiction of the United States "shall have the same right in every State and Territory to make and enforce contracts . . . as is enjoyed by white citizens." **[**40]** "Identifiable classes of persons who are subjected to intentional discrimination solely because of their ancestry or ethnic characteristics" enjoy protection under section 1981. *St. Francis Coll. v. Al-Khazraji, 481 U.S. 604, 613, 95 L. Ed. 2d 582, 107 S. Ct. 2022 (1987).* Under *McDonnell Douglas Corp. v. Green, 411 U.S. 792, 36 L. Ed. 2d 668, 93 S. Ct. 1817 (1973),* in order to establish a section 1981 case, Ruiz must first establish a prima facie case of discrimination by showing: 1) he fell within a class of persons protected under section 1981; 2) Fasteel met the necessary qualifications to be a Chance distributor; 3) Fasteel's ability to make and enforce contracts was adversely affected by Chance's actions; and 4) there was evidence that Chance's actions were motivated by animus based on national origin. See *Barge v. Anheuser-Busch, Inc., 87 F.3d 256, 258 (8th Cir. 1996).* In analyzing Ruiz's and Fasteel's claim, the district court assumed that appellees had made out a prima facie case, thus entitling them to a rebuttable presumption of discrimination. See *Tex. Dep't of Cmty. Affairs v. Burdine, 450 U.S. 248, 254, 67 L. Ed. 2d 207, 101 S. Ct. 1089 (1981).* **[**41]**

In order to rebut the presumption of discrimination arising out of establishment of a prima facie case, Chance must advance a legitimate, non-discriminatory reason for its actions. See *St. Mary's Honor Ctr. v. Hicks, 509 U.S. 502, 506-08, 125 L. Ed. 2d 407, 113 S. Ct. 2742 (1993).* Chance only has a burden of production, not persuasion. See *id. at 509.* If Chance produced a legitimate, non-discriminatory reason for its actions, Ruiz and Fasteel could still prevail by proffering evidence that Chance's reasons for its actions were a pretext for discrimination. See *Burdine, 450 U.S. at 253.* Ruiz and Fasteel bear the burden of establishing the existence of facts which, if proven at trial, would permit a jury to conclude that intentional discrimination was the true motivating force behind Chance's actions. See *St. Mary's Ctr., 509 U.S. at 507-08.*

The district court found that Chance offered a legitimate, non-discriminatory reason for its actions. Chance terminated Fasteel because "Ruiz, Fasteel's sole owner, was not using his best efforts to support defendant's business, as exemplified by Ruiz's involvement with Ram Jack." **[**42]** The district court also found that Ruiz and Fasteel failed to offer evidence demonstrating that Chance's reason was pretextual. Ruiz and Fasteel argue that Chance's reason was pretextual because: 1) Fasteel never directly dealt in products competitive to Chance's; and 2) other Chance dealers and distributors sold competitive products and Chance did not terminate them. The district court found that although there was evidence suggesting that some of Chance's dealers and distributors carried competitive products, Ruiz and Fasteel failed to show that the other dealers and distributors were similarly **[*672]** situated to Ruiz and Fasteel. See *Ghane v. West, 148 F.3d 979, 982 (8th Cir. 1998)* (although instance of disparate treatment can support a claim of pretext, the plaintiff has the burden of showing that he is similarly situated in all relevant respects to the individuals treated more favorably). The district court also found that Ruiz and Fasteel failed to offer any evidence that Chance personnel had "ever made any comments or engaged in any overt conduct that might . . . be perceived as evincing hostility towards Ruiz based on his Hispanic background."

Because the evidence **[**43]** presented to the district court was not sufficient to create a genuine issue of material fact, we affirm the district court's grant of summary judgment on the section 1981 claim.

B. Breach of Contract

Ruiz and Fasteel allege that the district court erred in granting summary judgment on their breach of contract claim. The relevant portion of the Distributorship Agreement between Fasteel and Chance states:

> This Agreement may be terminated at any time for any reason upon (1) sixty (60) days written notice by DISTRIBUTOR to CHANCE, or (2) upon one (1) year's written notice by CHANCE to DISTRIBUTOR, OR (3) as mutually agreed upon in writing by both parties. (emphasis added).

Ruiz and Fasteel argue that the language "for any reason" requires "a good reason." To support their interpretation, Ruiz and Fasteel offer extrinsic evidence of a conversation between Bill Edwards, a Chance Vice-President, and Ruiz, where Edwards allegedly told Ruiz that the agreement would only be terminated for "a good reason," and only after Fasteel received notice of any deficiency and had an opportunity to cure. Ruiz and Fasteel also argue that the "usage of the trade" demonstrates **[**44]** that termination cannot occur absent good cause.

The district court found that Ruiz and Fasteel failed to provide evidence sufficient to create a genuine issue of

material fact on their breach of contract claim. Under Missouri law, unless the contract is ambiguous, extrinsic evidence cannot be admitted to contradict, alter, or add to the terms of a contract. See, e.g., *Stewart Title Guar. Co. v. WKC Restaurants Venture Co., 961 S.W.2d 874, 881 (Mo. Ct. App. 1998)*. Further, usage of trade evidence cannot be admitted because it would violate Paragraph 25 of the Distributorship Agreement which states that "no course or prior dealings and no usage of trade shall be relevant to supplement or explain any terms used in this Agreement." Accordingly, the district court properly found that the contract at issue here is unambiguous in allowing termination of the contract for "any reason." See, e.g., *Emerick v. Mut. Benefit Life Ins. Co., 756 S.W.2d 513, 522 (Mo. 1988)* (en banc) (holding that language "at any time" meant that party had no obligation to provide reasons). Summary judgment was appropriately granted.

C. Breach of the Implied Duty of Good [45] Faith and Fair Dealing**

Ruiz and Fasteel's third non-patent claim charges Chance with breaching the Distributorship Agreement's implied duty of good faith and fair dealing. This duty was breached, Ruiz and Fasteel allege, because: 1) Chance's anti-Hispanic bias resulted in Fasteel's termination; 2) Chance offered no reason for terminating Fasteel; and 3) after the termination, Chance dealt directly with Fasteel's dealers.

Missouri law implies a duty of good faith and fair dealing in every contract. See, e.g., *Farmers' Elec. Coop., Inc. v. Mo. Dep't of Corrections, 977 S.W.2d 266, 271 (Mo. 1998)* (en banc). To prevail on a breach of duty claim, the party must present "substantial evidence" that the other party "acted in bad faith or engaged in unfair dealing." *Acetylene Gas Co. v. Oliver, 939 S.W.2d 404, 410 (Mo. Ct. App. 1996)*. **[*673]** The district court properly found that Ruiz and Fasteel failed to present "substantial evidence" that Chance breached the implied duty of good faith and fair dealing. Ruiz and Fasteel presented no credible evidence that Chance's termination was motivated by racial animus or that Chance failed to proffer a reason for terminating **[**46]** Fasteel. Further, Paragraph 12 of the Distributorship Agreement expressly provides that Chance is permitted to "sell, lease or transfer" its products to other purchasers "wheresoever the latter may be located." Thus, the lack of existence of a genuine material fact supports the district court's grant of summary judgment.

D. Promissory and Equitable Estoppel

Ruiz and Fasteel's fourth claim alleges that they sustained damages of over one million dollars in relying on Chance's representations to their detriment. The district court properly found that Ruiz and Fasteel cannot rely on a theory of equitable estoppel because under Missouri law, equitable estoppel "is an affirmative defense or an affirmative avoidance in response to an affirmative defense." *Hoag v. McBride & Son Inv. Co., 967 S.W.2d 157, 171 (Mo. Ct. App. 1998)*. The district court also properly found that a cause of action for promissory estoppel is not available. Under Missouri law, promissory estoppel is not available as a cause of action "when an unambiguous contract exists that covers the issue for which damages are sought." *Halls Ferry Inv., Inc. v. Smith, 985 S.W.2d 848, 852 (Mo. Ct. App. 1998)*. **[**47]** Recovery for promissory estoppel also cannot lie where there is an adequate remedy at law. See *Zipper v. Health Midwest, 978 S.W.2d 398, 412 (Mo. Ct. App. 1998)*. Moreover, Ruiz and Fasteel presented no credible evidence that they relied on Chance's promises to their detriment. Summary judgment was proper.

E. Tortious Interference with Contract and Prospective Business Relations

Ruiz and Fasteel's final non-patent claim alleges that Chance had disrupted or destroyed Fasteel's existing and prospective contractual and business relations. In order to prevail, Ruiz and Fasteel must prove five elements: 1) a contract or valid business expectancy; 2) Chance's knowledge of the contract or relationship; 3) intentional interference by Chance inducing or causing a breach of the contract or relationship; 4) absence of justification; and 5) damages resulting from Chance's conduct. See *Nazeri v. Mo. Valley Coll., 860 S.W.2d 303, 316 (Mo. 1993)* (en banc); *Thomas Phelps Found. v. Custom Ins. Co., 977 S.W.2d 33, 37 (Mo. Ct. App. 1998)*. Ruiz and Fasteel contend that Chance notified its dealers that Chance terminated Fasteel due to bad credit, **[**48]** and that Chance was attempting to sell directly to them, in violation of their agreement with Fasteel. The district court found that except for Ruiz's uncorroborated statement, there was no evidence that Chance ever made such a statement, or that Chance's alleged statement "caused the breach of any contract Fasteel may have had with its dealers." Accordingly, the district court's grant of summary judgment was proper.

Conclusion

We conclude that the district court erred in failing to make sufficient findings as required by Graham and *Fed. R. Civ. P. 52(c)*. Accordingly, we vacate the district court's judgment of invalidity and remand the case to the district court for appropriate findings on the obviousness factors. At its discretion, the district court may rely on or enlarge the evidentiary record. We affirm the district court's finding of infringement of the *'368* and *'107* patents, and affirm its refusal to award attorney fees and costs. We also affirm the district court's grant of summary judgment on the non-patent claims. Therefore,

if the district **[*674]** court does not invalidate both asserted patents, judgment of damages as found and not appealed may be reinstated.

Costs [49]**

Each party shall bear its own costs.

AFFIRMED-IN-PART, VACATED-IN-PART, and REMANDED.

...e actual loss to the trademark ...mpossible to compute, but this is ...ore in the nature of compensatory ...an restoring the trademark own... ...roperty to him, which is what is ...nderstood by restitution.

...etical matter, an award of profits ...urrogate for damages. Unless he ...diversion of sales, a trademark ...be hard pressed to prove damages, ...he shows confusion of the marks ...on of customers it is difficult to ...many customers bought the in... ...oduct who would have bought the ...owner's but for the deception. ...hasers of cheap "knockoffs" of ...oods would have bought the genu... ...) The damage caused by the dilu... ...owner's goodwill when the infring... ...are of inferior quality is virtually ...to quantify. At least in some cir... ...s the infringer's profits may be a ...sure of the owner's damages, and ...f profits affords some compensa... ...rademark owner. See *Louis Vuit... ...Lee*, 875 F.2d 584, 589 [10 ...939] (7th Cir. 1989) (plaintiff "is ...the very least either to simple ...r to the [innocent infringer's]

...lude that a claim for a trademark ...profits is more analogous to a suit ...s than one for restitution. Con... ...nized the difficulty of computing ... compensation for trademark in... ..., and directed the court to com... ...ges *and* profits to achieve a just ...t profits were combined with ...Section 1117 into a single mone... ...ry which constitutes "compensa... ...r than included in Section 1116, ...authorizing injunctions, suggests ...ss considered an award of profits ... nature of damages than as inci... ...quitable relief.

...ongress gave the court discretion ...he amount to be awarded, this ...does not render the proceeding ...In *Tull*, 481 U.S. at 425–26, the ...ourt held that a suit for an injunc... ...il penalty under the Clean Water ..."legal" action carrying with it the ...ry trial, even though the amount ...lty was to be determined by the ...r that the jury.

...use trademark actions were ...legal, because an equitable ac... ...r profits was not granted except ...was some other basis of equitable ..., because an award of profits in ...rk context is more like an award ...than restitution and because any

doubts should be resolved in favor of the policy expressed in *Beacon Theatres* and *Dairy Queen* favoring jury trials of factual issues, we believe that *Dairy Queen, Ross* and *Curtis* entitled Hartmarx to a jury trial on its claim for profits under 15 U.S.C. §1117.

[3] Since the jury trial was proper in this case the court may overturn its findings of fact only under the standards for granting a motion for judgment notwithstanding the verdict. The court does not agree with the Oxford's contention, based on the Fifth Circuit's opinion in *Sheila's Shine Products, Inc. v. Sheila Shine, Inc.*, 486 F.2d 114 at 121–22 [179 USPQ 577] (5th Cir. 1973), that the court may make its own findings of fact in deciding whether to grant an injunction. While the court sitting in equity has considerable discretion in determining the scope of an injunction, it may not substitute its own findings on validity or infringement unless it properly enters a judgment notwithstanding the verdict on the legal claim. See *Hussein v. Oshkosh Motor Truck Co.*, 816 F.2d 348, 355 (7th Cir. 1987) (jury's verdict on §1981 claim would bind the court in considering equitable relief under Title VII). Otherwise the jury's verdict would not be *res judicata* as to the issues properly submitted for jury determination. *In re Lewis*, 845 F.2d 624, 629 (6th Cir. 1988).

Oxford's motion to vacate the judgment entered December 1, 1989 is granted. Oxford's motion for the entry of the court's findings of fact and conclusions of law is denied.

Pending before the court are the following:

(1) Oxford motion for directed verdict, judgment notwithstanding the verdict and for new trial. Oxford shall submit its brief in support of this motion by May 15, 1990. Hartmarx's response will be due May 22, 1990, and Oxford's reply by May 29, 1990.

(2) Hartmarx motion for attorney's fees and costs. Oxford's response is due May 15, 1990 and Hartmarx's reply May 22, 1990.

(3) Hartmarx motion for injunction. This motion has been briefed. Oxford argues that an additional hearing is needed before the issue of injunctive relief may be determined. Oxford is to submit by May 15, 1990 an offer of proof setting forth the facts not contained in the record which it proposes to establish at such a hearing. That statement shall specify how each such fact will be proved, i.e., by documents or testimony, identifying the specific documents and witnesses. Hartmarx shall respond to that offer of proof by May 22, 1990, and shall include a statement specifying which facts listed in Oxford's offer of proof are disputed.

A hearing is set for June 14, 1990 at 2:30 p.m. at which time the court will hear argument on all pending motions and any additional matters which must be addressed before the entry of final judgment.

Court of Appeals, Federal Circuit

In re Spada

No. 90–1109

Decided August 10, 1990

PATENTS

1. Patentability/Validity — Anticipation — Prior art (§115.0703)

Rejection for anticipation requires, as first step in inquiry, that all elements of claimed invention be described in single reference, and such reference must describe applicant's claimed invention sufficiently to have placed person of ordinary skill in possession of it.

2. Patentability/Validity — Anticipation — Prior art (§115.0703)

Discovery of new property or use of previously known composition, even if unobvious from prior art, cannot impart patentability to claims to known composition.

3. Patentability/Validity — Anticipation — Prior art (§115.0703)

Board of Patent Appeals and Interferences did not err in finding that virtual identity of monomers and procedures between claimed pressure-sensitive adhesive composition and prior art is sufficient to support prima facie case of unpatentability of polymer latex claims for lack of novelty; applicant has burden, in face of such prima facie case, of showing that his polymer compositions are different from those described by prior art, and such burden is not met by simply including assertedly different properties in claims.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent, serial no. 859,057, filed May 2, 1986 by Lonnie T. Spada and Joseph J. Wilczynski. From decision rejecting claims, applicants appeal. Affirmed.

James H. Laughlin, Jr., of Benoit, Smith & Laughlin, Arlington Va. (Michael H.

Laird, Brea, Calif., with him on brief), for appellant.

John H. Raubitschek, associate solicitor (Fred E. McKelvey, solicitor, with him on brief), for appellee.

Before Newman and Mayer, circuit judges, and G.E. Brown, district judge (District of New Jersey, sitting by designation).

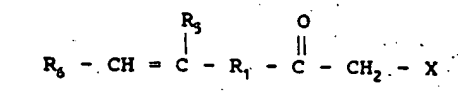
Newman, J.

The decision of the United States Patent and Trademark Office (the PTO) Board of Patent Appeals and Interferences (the Board), rejecting claims 2 through 25 and 27 through 31, all the claims at issue of Spada and Wilczynski (hereinafter Spada) patent application Serial No 859,057, filed May 2, 1986 and entitled "Pressure Sensitive Adhesives and Manufactured Articles", is affirmed.

The Invention

The Spada invention is a pressure sensitive adhesive composition comprising a water-based latex containing a normally tacky copolymer made from specified classes and proportions of monomers and having a glass transition temperature (T_g)[1] of 0°C or less. Claim 31 was treated by the parties as representative:

> Claim 31. A pressure sensitive adhesive composition comprising a water-base latex comprising a continuous aqueous medium containing dispersed particles of a normally tacky polymer having a T_g of about 0°C. or less and comprising at least about 60 weight percent olefinically unsaturated carboxylic acid ester monomers and at least about 0.1 weight percent of at least one polymerizable functional monomer of the formula:



in which R_1 is a divalent organic radical of at least 3 atoms in length, R_5 and R_6 are independently selected from hydrogen, hydroxy, halo, thio, amino or monovalent organic radicals, and X is -Co-R_4 or -CN wherein R_4 is hydrogen or a monovalent organic radical.

The Spada disclosure broadly is coextensive with claim 31. While claim 31 requires that the polymers comprise members of two general classes of monomers, Spada's specific examples illustrate polymers in which members of three general classes of monomers are present.

The first class of monomer required by Spada is an olefinically unsaturated carboxylic acid ester that is present in at least about 60 weight percent of the polymer. Representative examples show 96.5 weight percent butyl acrylate (Example 2), and a combination of 48 weight percent butyl acrylate and 48 weight percent 2-ethylhexyl acrylate (Example 11).

Spada's second required class of monomer is a "polymerizable functional monomer" present in "at least about 0.1 weight percent" of the polymer (claim 31). The illustrative examples show 1-2 weight percent acetoacetoxyethyl methacrylate (AAEMA).

Spada's specification states that preferred polymer compositions include at least about 0.1 weight percent of a third class of monomer, an olefinically unsaturated carboxylic acid. Examples are 1.5 weight percent methacrylic acid (Example 2) and 3 weight percent acrylic acid (Example 7).

All of Spada's claims require that the T_g of the claimed tacky polymers is about 0°C or less, and that the products are pressure-sensitive adhesives.

The claims were rejected as unpatentable in view of the Smith reference, United States Patent No. 3,554,987, issued January 12, 1971. The Spada disclosure and the Smith reference both show polymers of the same monomers, in overlapping ratios of components. However, the products that Smith and Spada obtain are described as quite different.

The Smith Reference

Smith describes water-based latexes containing dispersed particles of polymers made from certain classes and proportions of monomers. The polymers are used in binding agents in photographic gels and films.

In most of Smith's examples three monomers are present, as in Spada's examples. The first monomer in Smith's preferred polymers is an olefinically unsaturated carboxylic acid ester, in at least 50 percent by weight of polymer. In Smith's examples this component is illustrated, inter alia, as 75.7 molar percent butyl acrylate (Example 5), and 72.4 weight percent ethyl acrylate (Example 15).

[1] Glass transition temperature (T_g) is defined as the temperature (or temperature range) at which an amorphous polymer changes from a hard, rigid, glassy state to a soft, flexible, rubbery state. S. Rosen, *Fundamental Principles of Polymeric Materials* §8.1 (1982).

is -Co-R_4 or -CN wherein R_4 is
a monovalent organic radical.
ia disclosure broadly is coexten-
iim 31. While claim 31 requires
ymers comprise members of two
ses of monomers, Spada's specif-
illustrate polymers in which
three general classes of mon-
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class of monomer required by
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ples show 96.5 weight percent
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da's claims require that the T_g
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Smith reference, United States
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ted, inter alia, as 75.7 molar
crylate (Example 5), and 72.4
ethyl acrylate (Example 15).

Smith's second monomer used in preparing his preferred polymers is a polymerizable functional monomer like that described by Spada, present in about 2–20 weight percent of the polymer. Smith's examples include polymers containing 9.4 molar percent of acetoacetoxyethyl acrylate (AAEA) (Example 5), and 3.5 weight percent AAEMA (Example 15). Spada incorporated by reference the entire disclosure of the Smith patent, as showing polymerizable functional monomers suitable and preferred for use in the Spada polymers, and the preparation of these monomers.

The preferred polymers of Smith contain a third monomer, as do Spada's, and most of Smith's examples include acrylic acid. Thus, in Smith's Example 5 the complete polymer composition is 75.7 molar percent butyl acrylate, 9.4 molar percent AAEA, and 14.9 molar percent acrylic acid. In Smith's Example 15 the composition is 72.4 weight percent ethyl acrylate, 3.5 weight percent AAEMA, and 24.1 weight percent acrylic acid.

Smith states that emulsions containing his polymers have improved properties of hardness, resistance to abrasion, good adhesion, and dimensional stability. Smith does not show or suggest that his polymer latexes can form a normally tacky pressure-sensitive adhesive — properties admitted to be different from hardness and abrasion resistance.

Discussion

The Board affirmed the rejection of Spada's claims under 35 U.S.C. §102/103, this hybrid rejection having apparently been made on the theory that if the claimed subject matter was novel, i.e. not anticipated, in terms of section 102, then it would have been obvious under section 103.[2] The Commissioner on this appeal concentrates on the rejection for anticipation. The Commissioner argues that a *prima facie* case [3] of anticipation is made by the Smith disclosure of polymers that are apparently identical to those of Spada, although the properties described by Smith are different from those that are reported by Spada and included as express limitations in Spada's claims.

[1] Rejection for anticipation or lack of novelty requires, as the first step in the inquiry, that all the elements of the claimed invention be described in a single reference. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir.), *cert. denied*, 110 S.Ct. 154 (1989). Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. *Akzo N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1479, 1 USPQ2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909 (1987); *In re Coker*, 463 F.2d 1344, 1348, 175 USPQ 26, 29 (CCPA 1972).

Spada argues that Smith does not describe Spada's claimed invention, for to find anticipation "all limitations in the claims must be found in the reference since the claims measure the invention." *In re Lange*, 644 F.2d 856, 862, 209 USPQ 288, 293 (CCPA 1981). Spada states that since his compositions are claimed as pressure-sensitive adhesives containing a tacky polymer having a T_g below 0°C, they can not be anticipated. Spada argues that since the Smith products are hard, abrasion-resistent solids, they are *ipso facto* different.

[2] The discovery of a new property or use of a previously known composition, even when that property and use are unobvious from the prior art, can not impart patentability to claims to the known composition.[4] *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 782, 227 USPQ 773, 777–78, 778 (Fed. Cir. 1985); *In re Pearson*, 494 F.2d 1399, 1403, 181 USPQ 641, 644 (CCPA 1974); *In re Lemin*, 326 F.2d 437, 440, 140 USPQ 273, 276 (CCPA 1964). Thus, the initial inquiry is to the novelty of the composition. *Titanium Metals*, 778 F.2d at 780, 227 USPQ at 777.

The Board held that the compositions claimed by Spada "appear to be identical" to those described by Smith. While Spada criticizes the usage of the word "appear", we think that it was reasonable for the PTO to infer that the polymerization by both Smith and Spada of identical monomers, employing

[2] The court has accepted the PTO's practice of basing rejections on sections 102 or 103 in the alternative, provided that the appellant was fully apprised of all the grounds of rejection. *See, e.g., In re Pearson*, 494 F.2d 1399, 1402 & nn. 2–3, 181 USPQ 641, 644 & nn. 2–3 (CCPA 1974).

[3] The *prima facie* case is a procedural tool which, as used in patent examination (as by courts in general), means not only that the evidence of the prior art would reasonably allow the conclusion the examiner seeks, but also that the prior art compels such a conclusion if the applicant produces no evidence or argument to rebut it. *See Black's Law Dictionary* 1071 (5th Ed. 1979). *See generally In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (citing cases showing the evolution of the concept in patent examination of *prima facie* obviousness as a legal inference drawn from uncontradicted evidence). Upon rebuttal, the decision is made on the entirety of the record. *Id.*

[4] All of Spada's claims are composition claims. The issue is not before us of whether Spada may have discovered a new use of a known composition, which use may be patentable as a process. 35 U.S.C. §101. *See In re Hack*, 245 F.2d 246, 248, 114 USPQ 161, 163 (CCPA 1957).

the same or similar polymerization techniques, would produce polymers having the identical composition. Products of identical chemical composition can not have mutually exclusive properties. *See In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963) (a chemical compound and its properties are inseparable).

[3] While the art and science of polymer chemistry may be distinguished from that of simpler compounds and compositions, in Spada's case we conclude that the Board correctly found that the virtual identity of monomers and procedures sufficed to support a *prima facie* case of unpatentability of Spada's polymer latexes for lack of novelty. See, e.g., *In re Thorpe*, 777 F.2d 695, 697-98, 227 USPQ 964, 966 (Fed. Cir. 1985), wherein the examiner's rejection of product-by-process claims under §102/103, based on similarity of reactants, reaction conditions, and properties, amounted to a *prima facie* case of unpatentability.

In response to the PTO's asserted *prima facie* case the applicant may argue that the inference of lack of novelty was not properly drawn, for example if the PTO did not correctly apply or understand the subject matter of the reference, or if the PTO drew unwarranted conclusions therefrom. However, when the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not. *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 138 (Fed. Cir. 1986); *In re Ludtke*, 441 F.2d 660, 664, 169 USPQ 563, 566 (CCPA 1971). Spada offered no such showing.

The Board suggested that Spada provide some scientific explanation for the asserted differences between the properties of his compositions and those described by Smith. While an inventor is not required to understand how or why an invention works, we think that the PTO was correct, in view of the apparent identity of the compositions, in requiring Spada to distinguish [5] his compositions from those of Smith. Although newly discovered properties can be the basis of claims to *novel* polymers, *E.I. DuPont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1435, 7 USPQ2d 1129, 1133 (Fed. Cir.), *cert. denied*, 109 S.Ct. 542 (1988), Spada did not overcome, with argument or evidence, the apparent chemical identity of his polymers and those of Smith. Spada showed no error, in science or in law, in the Board's holding that the products appeared to be the same and thus that Spada's products were not new.

Spada pointed to his data wherein polymers containing varying amounts of AAEMA showed greatly increased shear strength without significant loss in tack, compared with polymers without the AAEMA. We agree with Spada that this result is not suggested in the Smith reference. However, these data did not relate to the fundamental question of the novelty of Spada's compositions in view of those of Smith. Without novelty, evidence of unobviousness is superfluous.

As we observed *supra*, discovery of an unobvious property and use does not overcome the statutory restraint of section 102 when the claimed composition is known. While Spada's position is that his polymers are not anticipated by the polymers of Smith because their properties are different, Spada was reasonably required to show that his polymer compositions are different from those described by Smith. This burden was not met by simply including the assertedly different properties in the claims. When the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in the prior art.

The Board's decision rejecting all of the claims is

AFFIRMED.

[5] It was discussed at oral argument that the Spada invention may not be "particularly point-[ed] out and distinctly claim[ed]", in the words of 35 U.S.C. §112, paragraph 2. No rejection had been made under section 112. The Solicitor stated that such a rejection was inappropriate because the claims were "not vague". ***But see Burlington Indus. v. Quigg***, 822 F.2d 1581, 1583-84, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987) (whether claims were too broadly written is not a section 103 determination but an issue of claim imprecision under section 112). ***See also In re Muchmore***, 433 F.2d 824, 824-25, 167 USPQ 681, 682 (CCPA 1970) ("there is sometimes a close relationship between indefiniteness under §112, second paragraph and obviousness under §103").

District Court, E.D. Michigan

Dana Corp. v. IPC Limited Partnership

No. 86-CV-70231-DT

Decided April 10, 1990 and May 21, 1990

PATENTS

1. Infringement — Defenses — Breach of duty of disclosure or inequitable conduct (§120.1111)

REMEDIES

Monetary — Attorney's fees; costs — Patents (§510.0905)

Patent infringement plaintiff's failure to disclose fluoride surface treatment necessary